Office Management and AMERICAN BUSINESS

The Magazine of Administration and Systems · March 1961

MAY 5

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1960 "Office of the Year" Award winners announced

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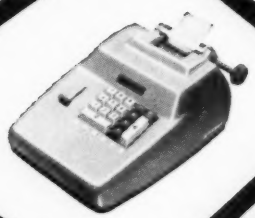

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Ray Eppert, president of the Burroughs Corp., proudly displays model of company's new B5000 electronic information processor, said to be only data processor ever designed specifically for use with automatic programming techniques, to Ken Bement, vice president — marketing. See story, page 34.

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Coming Events

CIA Southern Area Conference, Houston, March 2-4.
Sponsor: Controllers Institute of America.
Place: Shamrock Hilton.

AMA Data Processing Conference, New York, March 6-8.
Sponsor: American Management Association.
Place: Statler Hilton Hotel.
(Details on page 49)

Eighth Annual Midwest Conference, Chicago, March 17-18.
Sponsor: American Statistical Association and Chicago Association of Commerce and Industry.
Place: Congress Hotel.

American Personnel and Guidance Association Convention. Denver, March 27-30.
Sponsor: American Personnel and Guidance Association.
Place: Denver Hilton Hotel.

Tenth Annual Meeting and Convention, National Microfilm Association, Chicago, April 4-6.
Sponsor: National Microfilm Association.
Place: Hotel Sherman.

Sixteenth Annual Management Engineering Conference, New York, April 6, 7.
Sponsors: Society for Advancement of Management and Management Division of American Society of Mechanical Engineers.
Place: Statler Hilton.

CIA Eastern Area Conference. Washington, D. C., April 6-8.
Sponsor: Controllers Institute of
Place: Shoreham Hotel.

OEMI Business Equipment Exposition. New York, April 17-21.
Sponsor: Office Equipment Manufacturers Exhibits, Inc.
Place: New York Coliseum.
(Details on page 18)

CIA Western Area Conference. Phoenix, April 20-22.
Sponsor: Controllers Institute of America.
Place: Arizona Biltmore.

New England Business Equipment Exposition. Boston, April 24-26.
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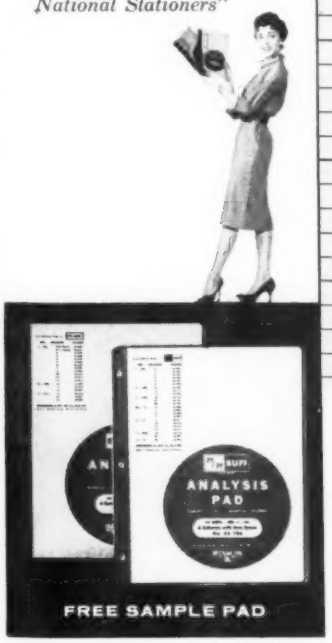

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BOOKS

THE OFFICE AND TOMORROW'S BUSINESS, By L. C. Walker, (privately printed edition, available from Shaw-Walker Co., Muskegon 21, Mich.) 187 pp., $4.75. This book is a re-issue of Mr. Walker's original work of 1930. Since it has not been brought up to date, many of the ideas, conceived during depression times, could sound old-fashioned today. But read such statements as "Faithfulness is a poor substitute for accomplishment, even the night-work, brief-case kind of faithfulness," or "Capable people need very little system. Incompetent ones should not be burdened with it. They work the system instead of performing a function. It stops their thinking," or the entire text of Chapter XV: "If a conference must be held, it should be kept clearly in mind that it is a device for considering and adopting policies, never for carrying them out. What American business needs is more clearance and less conference." If you cannot agree with these pregnant statements then—and only then—you can say the book is old-fashioned.

PROGRESSIVE FILING, Seventh Edition, By Gilbert Kahn, Theodore Yerian, and Jeffrey R. Stewart, Jr., Gregg Publishing Division, McGraw-Hill Book Co., Inc., New York, 182 pp., $3.16. Designed as a primer for the beginning file clerk and as a textbook for high school business courses, this easy-to-read book provides valuable information on records systems for the office manager or anyone else charged with the responsibility of making some sense out of the paperwork mountain. Although filing is just a matter of common sense, many offices would profit from putting into practice even the simplest recommendations.

ORGANIZED EXECUTIVE ACTION, By Henry H. Alberts, John Wiley & Sons, Inc., New York, 604 pp., $8.50. This is not "must" reading for the shirt-sleeve administrator whose prime job is to get as many papers as possible off his desk in a given length of time. But for the administrator who wants to put on his coat and move to a bigger office down the hall, it offers a good general education in how executives work, and why. Drawing its ideas from such diverse sources as Gibbon, Peter Drucker, and the 1955 annual report of the Ford Motor Company, the book offers the broad knowledge needed to break through specialization. Of special interest to the office administrator may be the section on communication and control systems, since these form the life blood of the smoothly functioning company. (Chapter 17 in this section offers a good description of electronic data processing for administrators who wonder what computers are all about.) Also included are the usual analyses of motivation and lines of authority found in such books.

PERSONNEL ADMINISTRATION, A POINT OF VIEW AND A METHOD, by Paul Pigors and Charles A. Myers, Fourth Edition, 749 pp., $7.95, and PERSONNEL MANAGEMENT, PRINCIPLES, PRACTICES, AND POINT OF VIEW, by Walter Scott, Robert C. Clothier and William R. Spiegel, 623 pp., $7.75. Two new tomes from the McGraw-Hill shop offer the latest of the "last words" in personnel administration. Both offer rewarding reading for the personnel manager as well as the undergraduate business administration student for whom they were presumably prepared. The former leans somewhat toward the psychological approach (*e.g.*, two chapters with interesting but puzzling titles: "Teamwork and Individual Goals" and "Situational Thinking"), but comes through with practical case histories toward the end. The latter takes an historical approach, complete with labor-management laws, Supreme Court decisions, and other vital information to place personnel administration in its legal and economic setting. It is the reviewer's choice of the two.

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SALES, SERVICE AND INSTRUCTION THROUGHOUT THE U. S. AND WORLD

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BOOKS

INFORMATION PROCESSING, United Nations Educational, Scientific, and Cultural Organization, Paris (distributed by International Documents Service, Columbia University Press, New York), 520 pp., $25. This book, the proceedings of the international congress on data processing organized by UNESCO in June, 1959, is not for the casual reader. And for the avid reader who does not want to miss a word, a knowledge of French, German, Spanish, and Russian is required. The work covers extremely advanced data processing techniques: language translation, international common language for computers, design of computers, and such future methods of computer construction as thin magnetic and cryogenic films for memory devices and microminiaturization. From Pascal and Leibniz to the latest computer systems, this report covers all significant factors of data processing.

This Month

Office planner BURTON RUDOW tells how he set up a modern, efficient office in a depressed area . . . Rather than move to expensive quarters, Richardson-Merrell decided it could get needed space by renovating its present office. Office Manager ROBERT PFLUGER describes the program . . . *Office Management and American Business* announces the winners in its eleventh annual "Office of the Year" competition . . . The fifth installment of the "Data processing for small business" series contains the findings of business instructor BURT SCANLON on the effects of automation on the small company . . . "Listen to your systems man!" warns CHARLES GODDARD of Thomas A. Edison Industries . . . RAYMOND DREYFACK, frequent contributor to this and other business magazines, provides guides to determine the length of a computer feasibility study . . . The "Office Design" section again consists of two articles: one on floor covering and maintenance and another on floor construction . . . "Tools of the Office" covers the copying processes and equipment; next month it will be devoted to the kindred subject of duplicating.

LONG SHADOW FROM PHILADELPHIA

EVENTS IN PHILADELPHIA last month cast a long shadow over American business and, ultimately, over the entire society. A shocked nation learned that 45 executives and 29 corporations had pleaded guilty to charges of fixing prices for heavy power generators and other electrical equipment in violation of the Sherman Anti-Trust Act. While these malpractices were confined to a handful of giant corporations, the entire business community could suffer an unjustifiable loss of prestige in public eyes as a result.

Fines totaling $931,500 were imposed in the largest of all criminal anti-trust cases prosecuted by the U. S. Justice Department. Seven executives, described by their lawyers as deacons and vestrymen of their churches and fund raisers for philanthropic enterprises, are now serving 30-day jail sentences. Significantly, the suits were initiated during the Eisenhower Administration, considered by many to have been a "businessman's administration."

Federal District Judge J. Cullen Ganey described these men as "torn between conscience and an approved corporate policy, with the rewarding objectives of promotion, comfortable security and large salaries—in short, the organization or the company man, who goes along with his superiors and finds balm for his conscience in additional comforts and the security of his place in the corporate set-up." Shortly after the sentencing, President Kennedy noted at his news conference that business groups might adopt codes of ethics similar to those of some labor unions.

Even though only a small group of men was found guilty, the case is an important example for everyone in business. It sharply defines the businessman's obligations to his conscience, his company, and his customers. These obligations are going to become more important to the office administrator as his expanding role in the company structure brings him into a position where he will have to resolve just such problems and decide where his first responsibility lies. The effect of the Philadelphia decisions, we believe and hope, will reinforce the average businessman's instinct: His first obligation must always be to his own conscience.

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HOW TO CREATE A FIRST-CLASS OFFICE IN A FACTORY-ORIENTED COMMUNITY

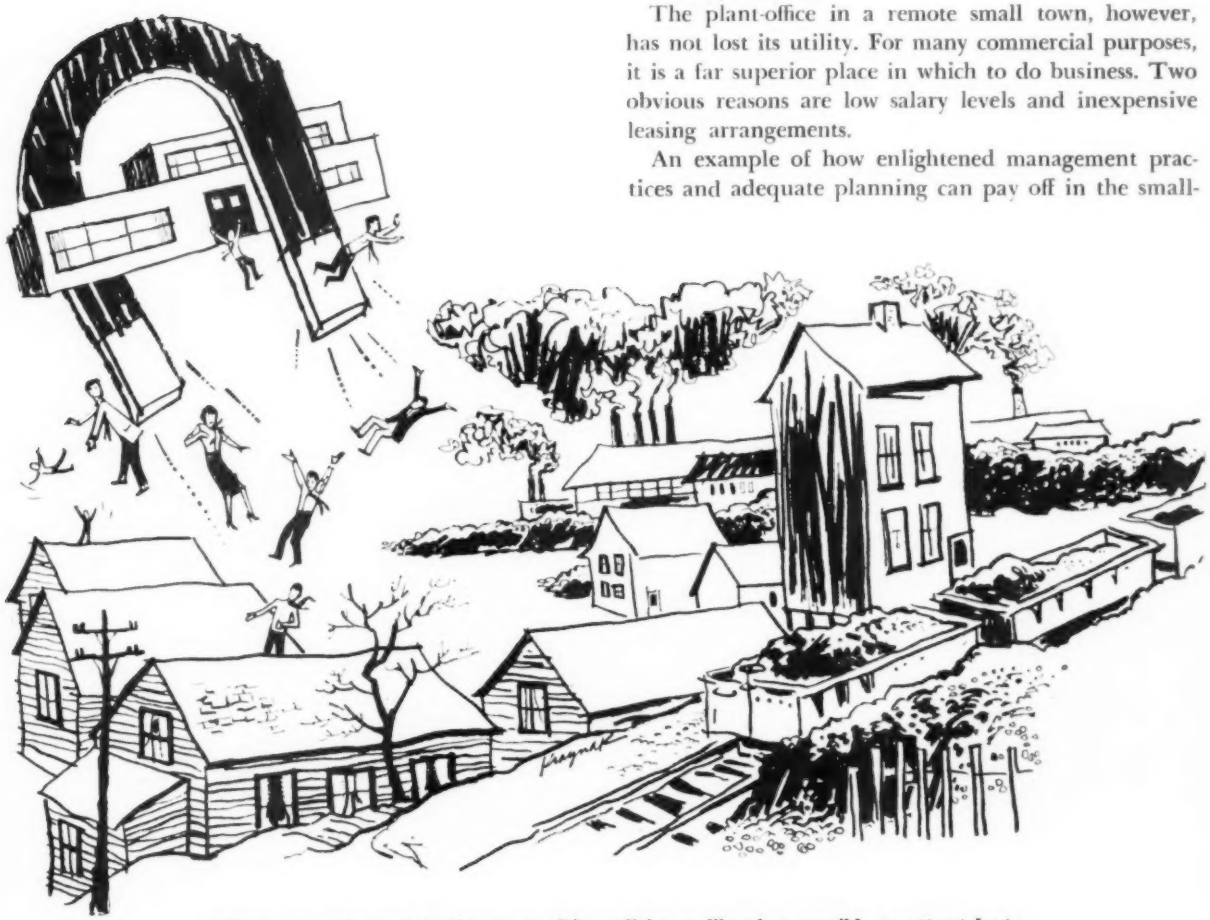
Make it a prestige symbol for entire area, screen your people wisely, and train them carefully. You're in business.

By BURTON RUDOW
Office Systems Planner

DECENTRALIZATION, the fad that swept American industry during the early fifties, has been reversed somewhat of late. The availability of attractive and convenient new skyscraper offices, the economies of congregating the administrative function around a central data processing system, and the convenience of being able to deal with one's business cohorts face-to-face, have all served to lure business back to the heart of metropolitan areas.

The plant-office in a remote small town, however, has not lost its utility. For many commercial purposes, it is a far superior place in which to do business. Two obvious reasons are low salary levels and inexpensive leasing arrangements.

An example of how enlightened management practices and adequate planning can pay off in the small-



Office was made as attractive as possible, policies as liberal as possible to attract best possible workers from area accustomed to drab, tightly disciplined working environment.

Use of U. S. Employment Service to screen job applicants saved time and money.

Labor was plentiful — unskilled labor, that is

town office is a light manufacturing company that I helped to install in new quarters in a depressed area of northeastern Pennsylvania. This project consisted of four phases: 1) locating and remodeling a suitable structure, 2) hiring workers from the locality to staff the organization (a difficult job since the principal industries in the area are mining and heavy manufacturing, which require few office employees), 3) training the new workers, and 4) establishing salary rates and personnel policies.

Abandoned loft building converted

The first step for our four-man planning committee was to locate a suitable structure to house the new operation. For this purpose, we selected a two-story loft building that had been flooded about five years before and left unoccupied since that time. The building had been used as a factory office and was an example of the usual cinderblock construction and green walls common in the area. The ceiling was a maze of beams and pipes better suited to a factory than to an office atmosphere. This condition of the building enabled us to negotiate a reasonable rental.

We then hired a cleaning crew to remove the residue on the floor left from the flood. This residue consisted of about two inches of mud, and no one, including ourselves, knew exactly what was under that mud. After two days of cleaning, we were fortunate enough to excavate a reasonably good tile floor. With the help of some high-grade wax we had a decent office floor. We next attacked the walls. Since we expected to hire a large percentage of women for the office, we decided to paint the walls pink instead of green. This made the building itself much more cheerful and was a vast improvement over the usual factory green.

Another problem was the ceiling. Fluorescent lights were suspended from the ceiling, which was painted a dull black to create the illusion that the lights themselves were the ceiling. This effect hid the beams and pipes from view. For a time, we had contemplated covering the ceiling with a beaver board material, but this was outside our budget limits.

Our next problem was, of course, furniture. Since we were going to buy more than 200 desks, we were in a position to negotiate with various manufacturers. We finally were able to get a good price—approximately three-fourths of the normal price—by buying desks attached to each other in twos. This saved the cost of the extra leg. We used the money saved on the extra leg to provide a corner piece that gave each two desks a modular arm. And by having the desks delivered unassembled and having our own crew install them, we were able to make additional savings.

The second phase of the project involved hiring clerical workers to staff the operation. The town was in the middle of a depressed area, so labor was plenti-

ful—unskilled labor, that is. This meant that we had to draw all our people from an unskilled labor market and train them ourselves. We first contacted the local office of the U. S. Employment Service. Their staff made arrangements to have people completely tested for us according to our own specifications. In this way we saved all testing expenses. They also did the initial screening and passed only one out of every three applicants. Thus, we preserved good community relations by not rejecting too many local job applicants.

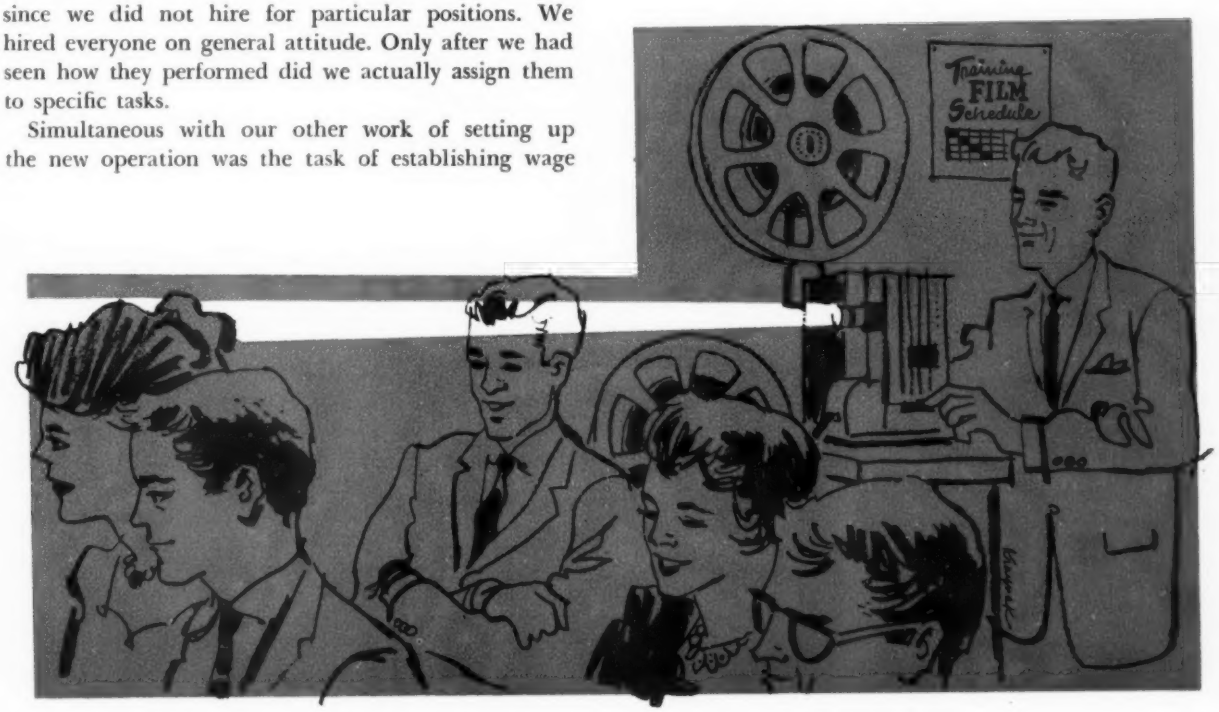
"Pyramid" training system used

Training posed one of the greatest problems. The four-man committee obviously was not adequate to the task of training more than 200 people. Consequently, we decided to hire ten people a week, starting with those who had the best potential to be supervisors, and working our way down. The men on the planning committee acted as the teachers and, during the first few weeks, as supervisors. After the third week the first group of new workers began training the fourth group, and from the first and second groups we eventually got our teachers for the rest of the organization.

We were fortunate that the building had an auditorium that was equipped with a projector and that seated approximately 95 people. We used these facilities for teaching. The schedule approximated two to four hours of teaching a day; the balance of the work day was spent in doing the jobs that had been taught. In this way we eventually trained all our people. It is important to note that besides giving classes in the work itself, we gave classes in leadership, how to supervise, and how to teach. This instruction was necessary since we did not hire for particular positions. We hired everyone on general attitude. Only after we had seen how they performed did we actually assign them to specific tasks.

Simultaneous with our other work of setting up the new operation was the task of establishing wage

Phase one: abandoned loft building was converted into attractive, brightly painted office space.



Unskilled workers were given two to four hours of training each day.

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Honor system used

rates, hours, and general management policies. This was done by contacting both the chamber of commerce, U.S. Employment, and various firms in the area—all of whom were extremely cooperative and told us approximately what they were paying for various positions. We established our rates at the median for the area to maintain good relations with other concerns, prevent personnel raids on us by other companies, and *vice versa*. We also established a policy of three-month, six-month, and annual salary reviews for all employees so that they could know exactly how they were progressing at all times.

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The net result of these policies was an efficient, inexpensive, and productive office operation. Operating costs were held to 21 per cent of the gross annual sales of about $10 million—more or less average for the industry. In addition, we brought a fresh transfusion of capital investment and new jobs to a chronically depressed area.

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OEMI expects 60,000 at New York exposition

More than 60 leading manufacturers of business machines, equipment, and related supplies are completing plans for the first presentation of the Business Equipment Exposition in New York. The event is scheduled for the New York Coliseum April 17-21. It will be sponsored by Office Equipment Manufacturers Exhibits, Inc., a subsidiary of the Office Equipment Manufacturers Institute.

In making the announcement, Lloyd M. Powell, president of both Dictaphone Corp. and OEMI, stated, "This industry-sponsored exposition will provide business management executives in New York, as well as from all over the country, with a long-awaited opportunity of seeing the latest developments and progress of the business equipment industry – the industry that serves all industry."

Occupying two floors of the Coliseum, the Business Equipment Exposition will present a wide variety of new products to the New York visitor–from typewriters to electronic data processing equipment. During the five-day run of the exposition, an invited audience of about 60,000 is expected to tour the display areas from the 1 p.m. daily opening to the nightly closing at 10.

According to preliminary reports from exhibitors in the Business Equipment Exposition, a broad scope of new products and equipment will be unveiled during the presentation. Of interest to executive visitors will be the items displayed in a major New York business equipment exposition for the first time. (The New York presentation is one of a series of industry-sponsored expositions; the two prior stagings were in Washington and Los Angeles.)

The exposition will cover all vital phases of business operations: basic machines; dictating and transcribing systems; copying and duplicating equipment; furniture and accessories; data processing, accounting, and bookkeeping machines and systems; business forms; filing and storage equipment; intercommunications devices, and other items.

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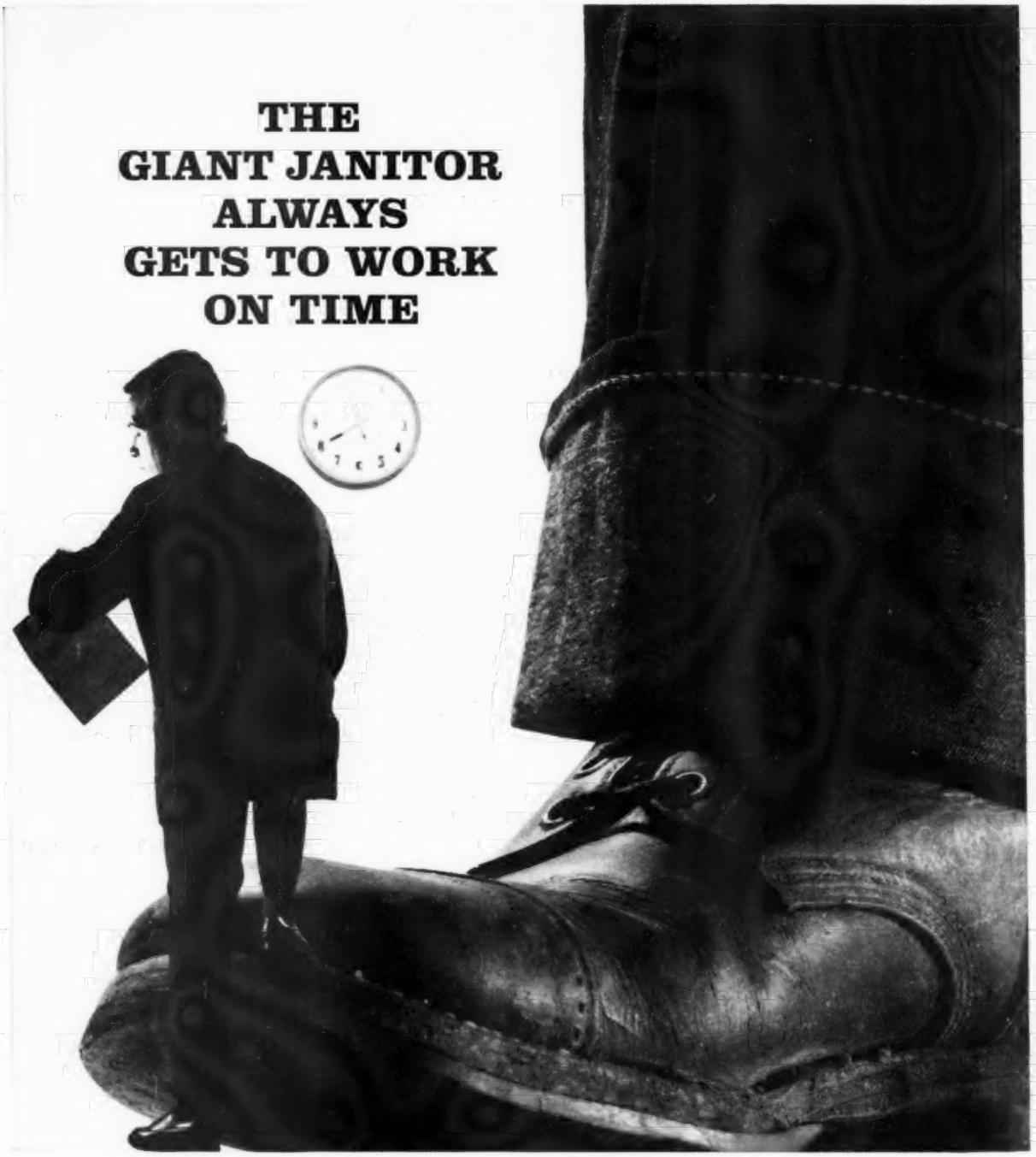

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(Circle No. 5 on Reader Inquiry Card)

Office "bursting at the seams"?

MOVING ISN'T THE ONLY ANSWER

Remodeling met Richardson-Merrell's need for more space

By ROBERT A. PFLUGER
Office Manager
Richardson-Merrell, Inc., New York

MOVING TO NEW quarters is not the only answer for the company that needs more and better space for its administrative functions. Despite the office building boom that is sweeping the country, many companies could better meet their needs by renovating existing office space than by moving to newer and more expensive quarters.

When Richardson-Merrell, Inc. (formerly Vick Chemical Co.) faced this problem, the company discovered these advantages of staying in its present building:

1) Low rental rate per square foot.

2) Availability of short-term leases with options for extension at the same rate.

3) Additional permanent and temporary space available when needed.

4) An extremely cooperative owner and manager.

5) Good working relationships developed over 30 years of tenancy.

6) Comparatively low construction rates.

7) Excellent transportation and hotel facilities nearby.

The rapid expansion of Vick Chemical, and subsequently Richardson-Merrell, since World War II demanded immediate action to ease the pressure on its New York headquarters. Located in the Chanin Building near Grand Central Terminal, the central office directs the manufacturing and sales activities of 11 operating divisions. During the past decade sales had grown from $42 million a year to $132 million in the fiscal year that ended June 30, 1960. This growth made it necessary for the company to acquire additional space in its building as quickly as possible to house expanded activities. These piecemeal acquisitions resulted in offices that were drab and cheerless, somewhat unwieldy in size, and extremely monotonous in color scheme. In addition, the cost of adding small amounts of space at a time turned out to be greater than a proper renovation of the space.

As a result, Vick Chemical in 1956 put into operation a three-year plan to modernize and renovate all office space. The first step in this plan entailed the replacement of all clerical furniture and

Queen Victoria would have felt at home: Before remodeling, Vick Chemical's reception area presented appearance of tradition-bound company; general office areas were a maze of odd furniture and filing units; monotonous offices hampered work.

machines on a pre-determined schedule. Management, recognizing the importance of the clerical work force, decided to outfit this group first with the best available tools. Office equipment was considered against minimum standards established for work efficiency, and obsolete furniture was traded for new desks, chairs, files, and machines that met these standards.

Once the furniture in the clerical area was replaced, the company followed the same plan for middle management personnel until all but the top corporate officers had new furniture. Of course, all this new furniture could be taken to a new building if the company ever decided to move. Finally, top management men were given brochures from furniture companies from which they could choose all the furnishings for their offices. They had to conform to general furniture specifications, but they had complete latitude in selecting accessories. Delivery of the furniture was scheduled to coincide with completion of the renovation, and the average cost of outfitting each executive was $2,200.

Office manager was "Czar"

In the second step of the master plan, Vick established a steering committee that consisted of seven top management men and the office manager. This committee was responsible for the review of all preliminary plans. Once the program was underway, the office manager acted as the "Czar" of the project for coordination and execution of all plans.

Into the twentieth century: New reception area was reclaimed from space that had once gone to waste. Coordinated office furniture and equipment, plus realistic work flow systems designed to meet office worker's needs, stimulate office efficiency.

During this second phase, which got underway in late 1957, the steering committee made a complete study of the physical attributes of the space. Each general manager was asked to project his space requirements over the next several years. Simultaneously, a detailed survey was completed that compared the present office location to many of the new office buildings in the Grand Central area.

These studies brought to light many significant facts about Vick's offices and the building that housed them. The building itself, a skyscraper built in 1928-29, was in excellent condition. The building management had made major changes for the comfort and convenience of its tenants, *e.g.* air conditioning.

The negative factors of the offices, however, pointed clearly to the need for renovation. The air conditioning ductwork was unsightly, and reduced headroom. In most cases the compressor rooms were so poorly placed that they complicated the wasted space problem. Some of the incandescent lighting fixtures had been replaced by fluorescent lights, but the new fixtures were hung from existing outlets spaced on nine-foot centers. This caused some areas to be extremely dark while others suffered from glare.

All telephone equipment was fastened to the wall next to each phone. This not only was unsightly, but it caused servicing and noise problems. Office sizes and shapes were irregular; little consideration was given to job level or special requirements. Most of the furniture had long outlived its usefulness, lost its beauty, and was a hodgepodge of mixed pieces. Most of these obsolete pieces merely ate up valuable floor space without serving any real purpose.

The filing system was equally hampered by obsolete equipment and unwieldy office layout. The files and storage cabinets accumulated over the years were of assorted sizes, shapes, and colors, which made proper space planning difficult. Drapes and carpeting had become faded and threadbare, and most of the clerical areas were still covered with old, much-patched tan and green linoleum.

On the basis of these evaluations,

Departments grouped functionally in renovated space

Vick took the following five steps:

1) The company decided to renovate instead of move and thus retain its attractive rental rate.

2) It renovated 80,000 square feet, in units of 10,000 square feet at a time, during approximately one year.

3) Temporary quarters were provided in the building for more than 400 employees so that they could carry on their routine office functions during the remodeling.

4) The company created a modern office complete with hung ceilings; recessed lighting; air conditioning; new flooring and carpeting; drapes; a cheerful, attractive color scheme at a comparatively low price per square foot.

5) Finally, the new physical form of the headquarters projected the image that the company sought—that of an alert, progressive corporation.

After new furniture had been purchased and the steering committee had submitted its reports, the company negotiated and signed a new lease before step three of the plan could be set in motion. This step involved the renovation and began with careful scrutiny of present departmental arrangements. Rearrangements and consolidations were recommended. To eliminate the wasted space prevalent in other buildings, public corridors were eliminated and converted into clerical space. Compressor rooms were either converted to file rooms or moved to less valuable space. A separate and distinctive top management area was established.

To facilitate work flow, departments were grouped functionally. The international division got one floor for the consolidation of its many operations. Another large area was set aside for the domestic division. All accounting functions congregated on another floor with other service functions. Central service functions that served the entire enterprise—Personnel, Legal and Tax, and the advertising group moved to strategic locations. Finally, the main reception room was located centrally in what was previously unusable space so that it could serve the whole New York office.

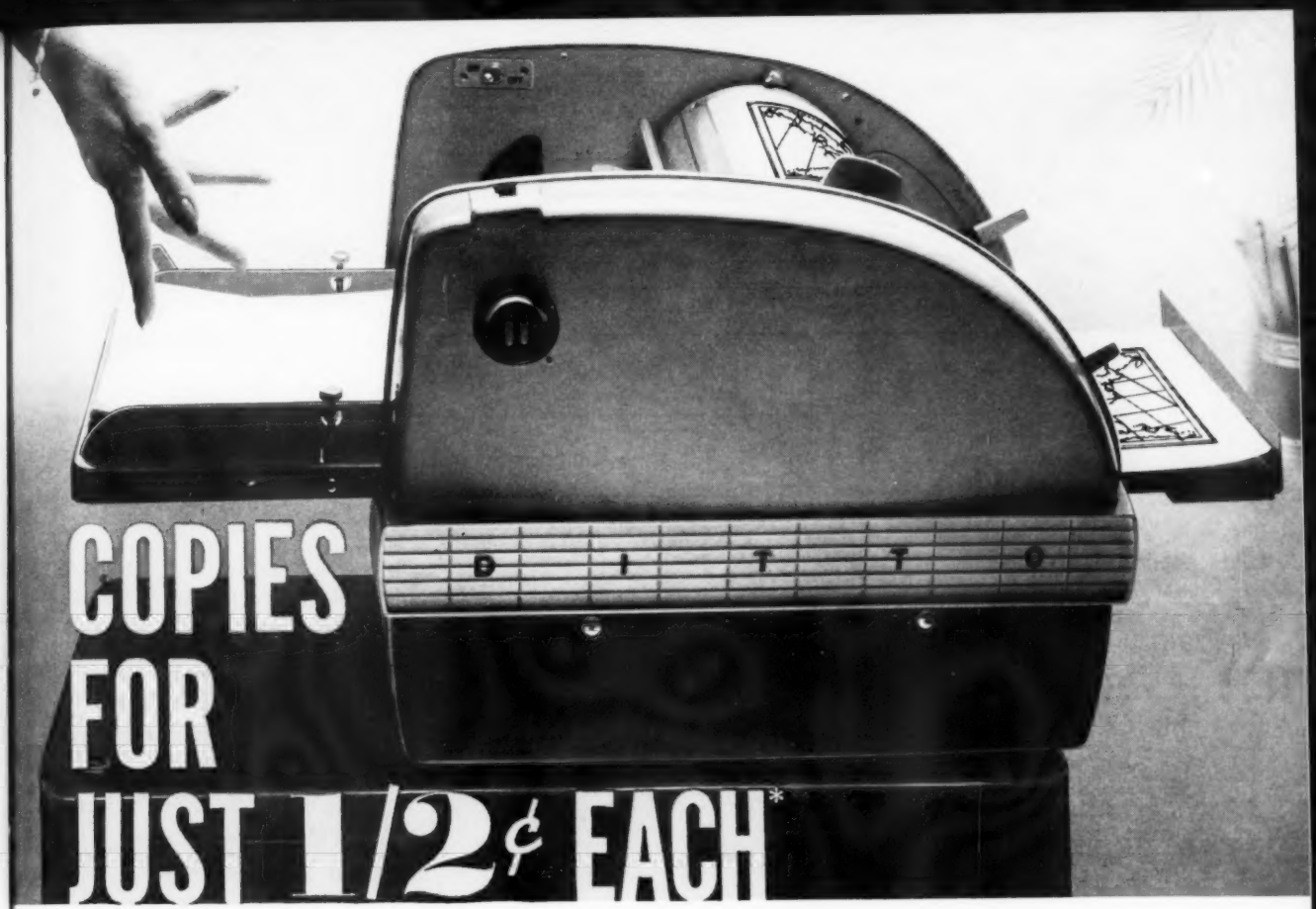
Office Manager Pfluger, "Czar" of the renovation project and author of this article, occupies a typical middle management office on the nineteenth floor of the Chanin building.

General managers approved

Next, all employees were categorized within five groups: A—top management, B—general managers (divisional presidents), C—middle management, D—other exempt employees, and E—clerical employees. Standards were established as to office sizes and furnishings in accordance with these levels. (Consideration was given to special requirements of each department.) This skeleton departmental arrangement and standard requirements became the backbone of the preliminary floor plans and scale drawings.

Each general manager was consulted as to how these arrangements would best serve his divisional and departmental needs—both functionally and physically. Once each general manager approved his plans, final layouts were prepared to show in detail all furniture, equipment, telephone and electrical requirements. The building management then reviewed these office layout plans and prepared detailed construction drawings that showed partitions, electrical lighting, plumbing, and air conditioning. Copies of the telephone requirement plan were also forwarded to the telephone company so their engineers could plan their equipment rooms, cables, and the final telephone installations.

Once the construction plans were received, they were carefully reviewed to ensure that original space, lighting, and air conditioning requirements were met. Vick then asked the building management to submit formal, detailed quotations as to the work to be done and specific costs of each type of con-



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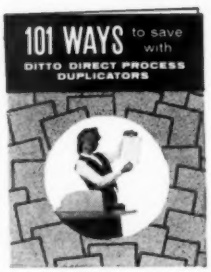

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Actual renovation began

struction. At the same time, the office manager estimated what he thought these items would cost by measuring and applying his own construction cost standards.

The steering committee then compared the quotations of the general contractors with original estimates, and all large variances were discussed with the building management and reconciled. If any quotation listed an unusually large amount of money to be spent for a specific change, the planners carefully scrutinized this item to determine whether it was worth doing at all or if a less expensive method could be substituted. A complete budget and request for capital appropriations then went to the board of directors for approval and the awarding of construction contracts. Similar bids were solicited and awarded to outside suppliers for the carpeting, tiling, draperies, venetian blinds, and furniture.

Planning saved overtime

At last the actual renovation could start. Each area to be renovated was completely evacuated prior to starting the work so that normal office operations would not be disrupted. This meant double moving costs and also necessitated setting up temporary quarters for a total of more than 400 employees. However, since it would have been extremely difficult to make extensive construction changes during office hours — the overtime alone would have nearly doubled the cost of the job—this method proved to be less expensive in the long run.

To ease the problems of renovation, the company leased additional floor space and rented some temporary space where it could shift employees while permanent quarters were being prepared. A complex schedule was developed for each renovation and move. As one group moved back to its newly renovated area, another group moved to the temporary quarters the next morning. These temporary offices were equipped with telephones and other services so that no time was lost as a result of the renovation.

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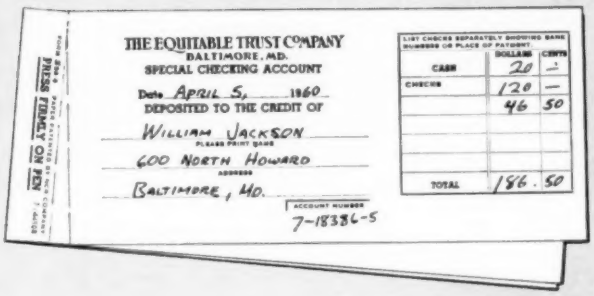

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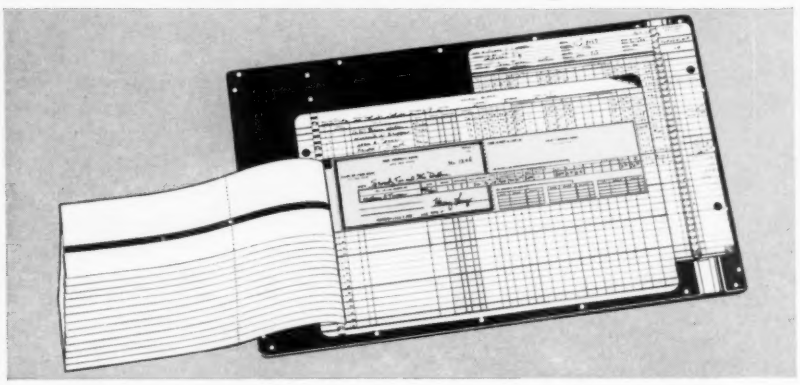

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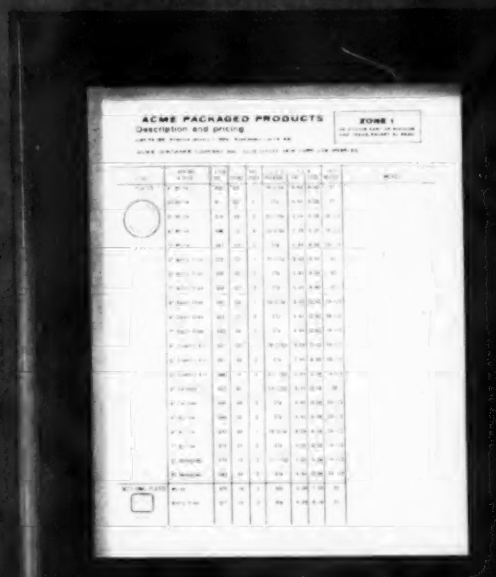

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To aid in the judging, a mail poll is taken among selected members of the American Institute of Architects and the Association of Consulting Engineers who have a special interest in the office field. The awards are made in two size classifications. The top winner in each classification is designated as an "Office of the Year." This honor is symbolized by a silver plaque. The two runners-up in each classification receive awards of merit symbolized by bronze plaques.

Pictures and details of the six winning offices will be featured in the May issue of *Office Management and American Business.*

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(Circle No. 72 on Reader Inquiry Card)

AFTER YOU AUTOMATE, THEN WHAT?

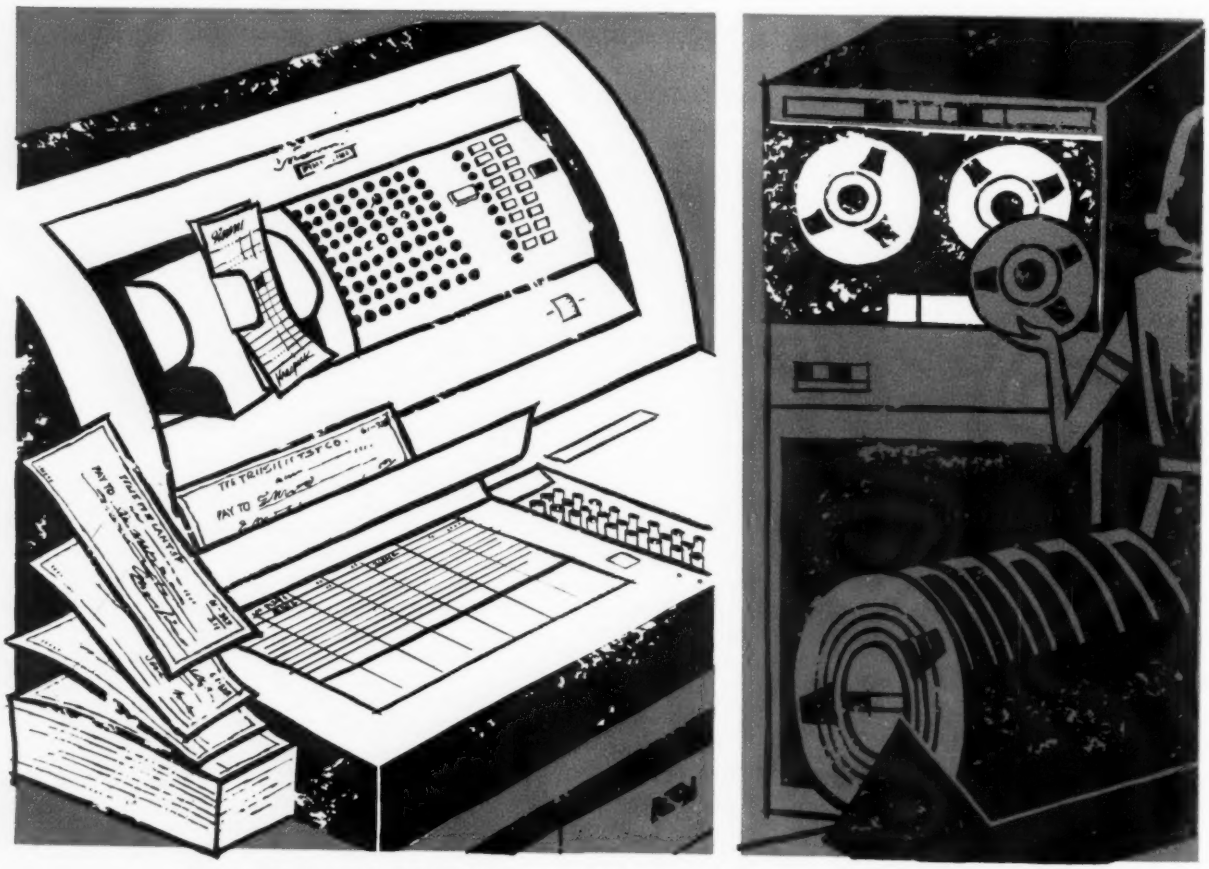
Although attrition absorbs displaced workers, fewer jobs result

By BURT K. SCANLON
Instructor of Business Administration
University of Nebraska

NO RULE of thumb states that when a firm reaches a given size it is ready to install automated office equipment. Each situation necessitates a decision by management relevant to the facts involved. It would seem wise, however, to be a leader in the move to automation, not a follower.

There is a pressing need for companies to begin an analysis of their present operations. They must be aware of total operating costs and the degree to which automated equipment can reduce them. This is especially significant in a period when services to customers are being extended, and internal improvements are being sought. Such is the situation today. The amount of automation that can be justified will depend on the particular company in question.

In any case, automated office equipment represents the future for an efficient operation. As such, more firms will be turning to its use. Because of both the immediate effects and the long-term implications on the employer, employees, and the general public, automated equipment deserves consideration from all three groups. Conse-



The semi-automated Post-Tronic system at the bank and the fully automated IBM RAMAC computer at the insurance company greatly changed the personnel needs of both firms.

quently, one of the preliminary steps should be to examine the impact of an installation of automated office equipment. To this end, the following case histories of two Midwestern companies that deal primarily with paperwork may be illustrative. Although these companies would not permit identification, their situations are typical of a large segment of American business.

The first organization is a large insurance company that serves primarily the fields of automobile and property coverage. The installation involved was an IBM RAMAC data processing unit. The states in which the company operates are divided into four regions, each of which is served by a separate RAMAC unit. Total employment in the home office is 304 employees.

Nearly 70 jobs eliminated

The second study was conducted at a bank and involved the installation of National Cash Register's Post-Tronic posting machine. Of significance is the fact that not only are two different industries involved, but that the RAMAC represents a completely automated system, while Post-Tronic is only a partially automated system.

The RAMAC unit caused the following results at the insurance company:

1. The total number of employees was reduced. At the insurance company studied, this reduction amounted to 68 persons, or a saving of about $202,232 in on-the-job salary costs.

2. The jobs affected most were those in the middle and upper clerical levels. The largest reductions were among raters and policy writers.

3. Employees were not laid off as a result of the RAMAC installation. The change-over was planned so that attrition would absorb the excess work force. Prior to the installation, vacancies were left open to facilitate this process.

4. Job content was not so significantly affected as the number of persons needed to perform the job. Those remaining in their present positions do essentially the same tasks as before.

5. The number of supervisory jobs declined. This logically follows because of the reduction in the number of operative employees.

6. Some supervisors were upgraded while the future of others remained uncertain. RAMAC provides a limited number of higher level jobs, but not enough to make room for all present supervisors.

7. Salaries were not negatively affected by the installation. This is company policy. For those who remained in their former jobs no immediate changes were made. For those who moved to a new job or were upgraded, any changes were in an upward direction.

8. Electronic equipment improved the firm's competitive position by reducing cost.

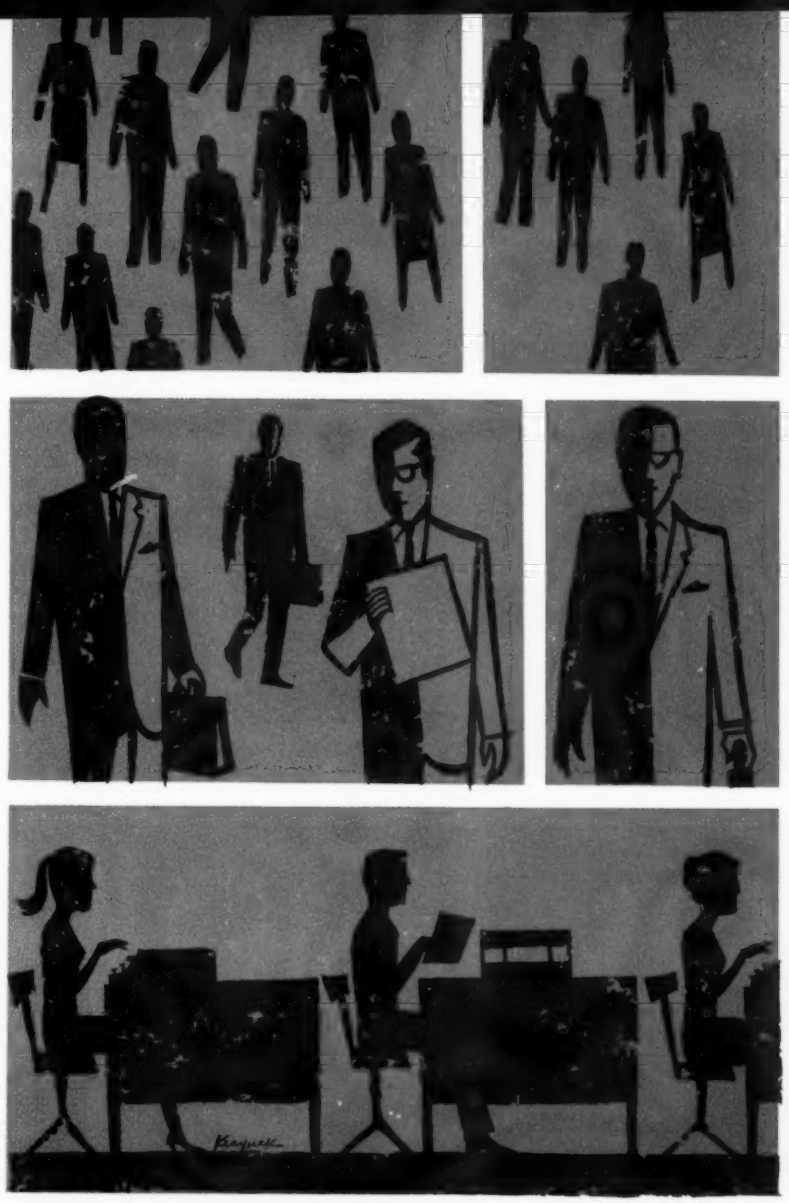
9. In addition to savings from the reduced number of personnel, needed savings also resulted from reduced costs of recruiting, training, turnover, and fewer mistakes.

10. The office space needed to handle the present volume of business and any increased volume was significantly reduced.

Similar results were observed at the bank after the installation of the Post-Tronic:

1. The number of employees needed for the bookkeeping operation was reduced. In this case, the reduction was from 31 employees to 18.

2. The job affected most was that of the bookkeeper. This effect was



Installation of automated office systems at both small companies resulted in fewer supervisors, fewer clerical employees, but job content was changed little, if at all.

not only in reduced numbers, but also one of simplification.

3. There were no lay-offs as a result of the installation. The machines were introduced gradually, and attrition absorbed excess help. Aiding this process was the fact that the transition was timed to correspond to annual vacations and periods of slack work loads.

4. The number of supervisory jobs also declined. This decrease was proportionate to the reduction in the number of operatives.

5. The content of the supervisor's job also changed. He now spends less time in actual supervising and has taken on some new duties, such as training.

6. Salaries were not affected by the installation. This is in spite of the fact that the bookkeeper's job has been simplified. If anything, upward pressure was exerted. This pressure is caused by the competition that exists among employers to get the best qualified workers. There is still some question as to the qualifications needed to perform the job and how to measure them.

7. Electronic equipment improved the firm's competitive position by reducing costs. The largest single savings resulted from the reduction in the number of employees.

8. Savings also accrued from the reduced costs of recruiting, training, and fewer errors. It is difficult to place a dollar value on these savings.

9. The space needed to service the present volume of business has been reduced. This is especially important where volume is increasing and there is no room to expand.

10. The number of accounts handled by each bookkeeper has tripled. This is due to the electronic functions of the Post-Tronic.

More and more routine accounting functions are passing from human hands to computers.

Salaries not affected

Although the results of the RAMAC installation at the insurance company were quite similar to those caused by the Post-Tronic installation at the bank, certain major differences were also observed:

The job content of the bank's bookkeepers has been significantly simplified. The Post-Tronic does electronically much of what the bookkeeper was relied upon to do with conventional equipment. As a consequence of the machine's electronic functions, more emphasis is being placed on human speed and less on accuracy.

At the insurance company, however, job content has not changed much. Those remaining at their present positions are performing about the same tasks as before the RAMAC installation. The major effect is in the number of employees needed.

Supervisory jobs also were affected more at the bank than at the insurance company. With the Post-Tronic, not only are fewer supervisors needed, but operative employees need less supervision. As a result, the supervisor has taken on new duties. There seems to be little room for upgrading present supervisors.

Although the number of supervisors needed at the insurance company has decreased, there is more room for upgrading. This may be a reflection of the fact that RAMAC is a completely automated system while Post-Tronic is only a first step. The insurance company, however, does not seem to have the type of operation that can be as completely automated as that of the bank.

On the basis of these similarities and differences between the two companies, a series of general conclusions concerning the introduction of automated equipment can be drawn. These conclusions are, of course, subject to the results of further studies in similar or different industries.

1. The total number of clerical jobs is being reduced. The major portion of this reduction is in what might be termed the middle bracket of jobs.

2. The installation of automated office equipment does not result in immediate layoff of present employees.

3. The number of supervisors needed is decreasing.

4. The volume of work that can be handled is increased with electronic equipment. This is done with fewer employees.

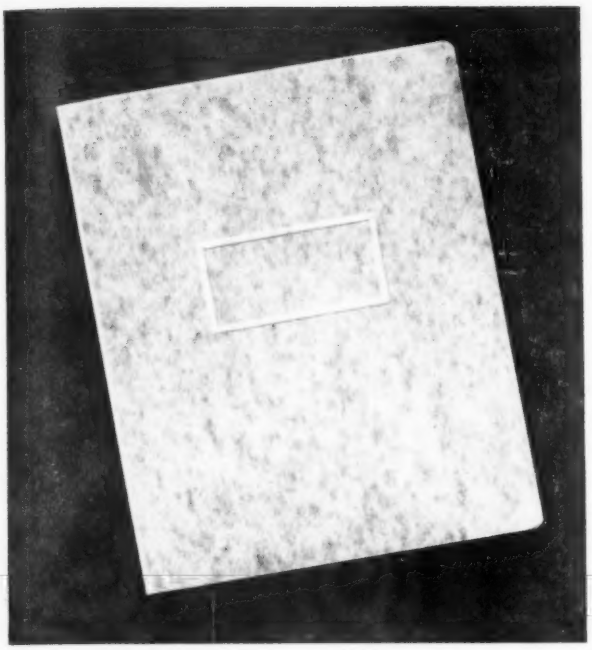
5. Salaries are not negatively affected by the installation. This is true for the short term. The long-term effect remains to be seen.

6. A firm's competitive position is improved with electronic equipment by the reduction in operating costs. The largest single saving results from the reduction in the number of employees needed.

7. Substantial savings also accrue from the reduced costs of recruiting and training.

8. The space needed to handle the present volume of work is reduced. This factor becomes important when business is expanding and space is limited.

The results of these two studies are not final. Both companies are continuing their office automation programs. Similarly, many companies that do not have automated equipment can benefit from such studies to improve their knowledge of the field. And as more information becomes available, management will be able to make sounder decisions with respect to its use.



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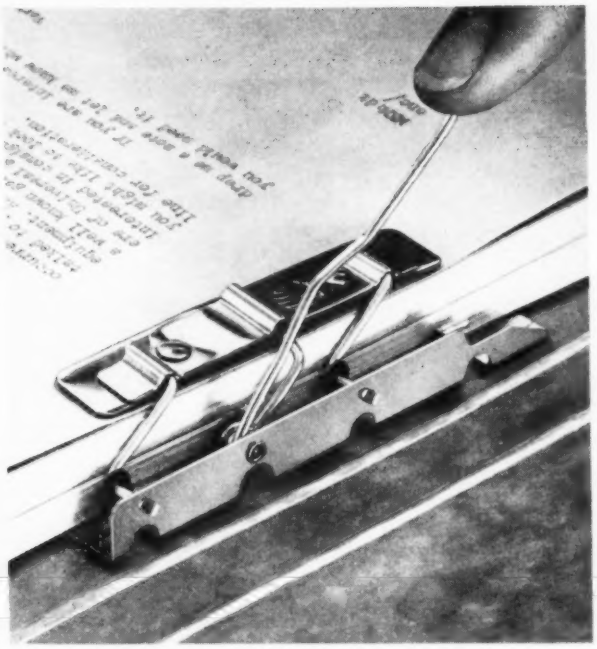

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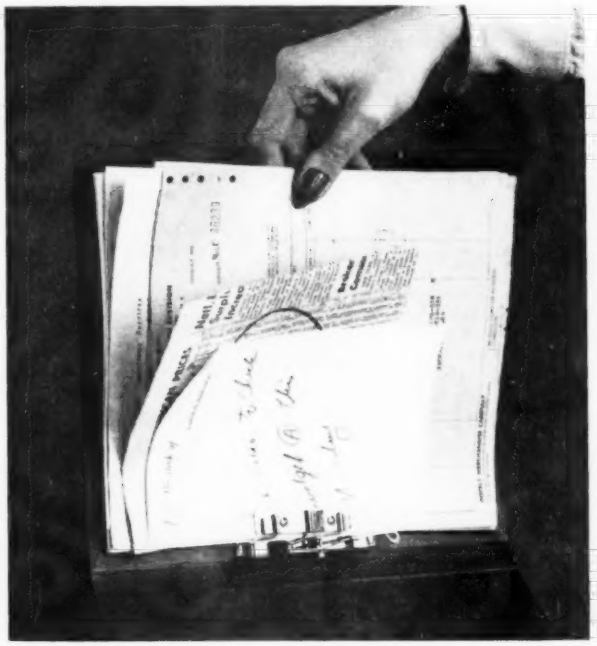

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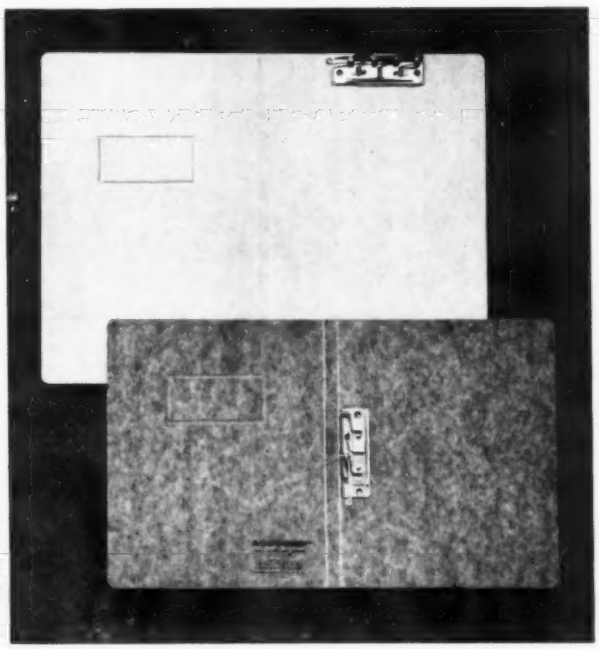

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(Circle No. 1 on Reader Inquiry Card)

BURROUGHS NEW SOLID STATE B5000 DESIGNED FOR AUTOMATIC PROGRAMMING

BURROUGHS Corp. late last month announced a new solid state electronic data processing system—the B5000. According to company spokesmen, the new system is the first computer ever designed especially for automatic programming applications.

The new system also makes "flexible multi-processing and system expansion without reprogramming practical for the first time," according to the manufacturer.

Announcing the Burroughs B5000 electronic information processing system in New York City, Ray R. Eppert, president, said the new computer is "one of the most powerful tools yet devised for the solution of complex business and scientific problems."

A medium-priced system, the B5000 will provide performance equal to or greater than "so-called large-scale computers with an ease of utilization some experts predicted would not be forthcoming for another decade," he declared.

"It departs from traditional concepts of computer design to drastically cut programming time and problem-solving costs long associated with conventional computer systems."

The B5000 is a versatile, ultra-high speed data processing system that automatically "adjusts to its own environment," schedules and keeps track of its own work load, and actually tells itself as well as its human operator how it's doing, the president said.

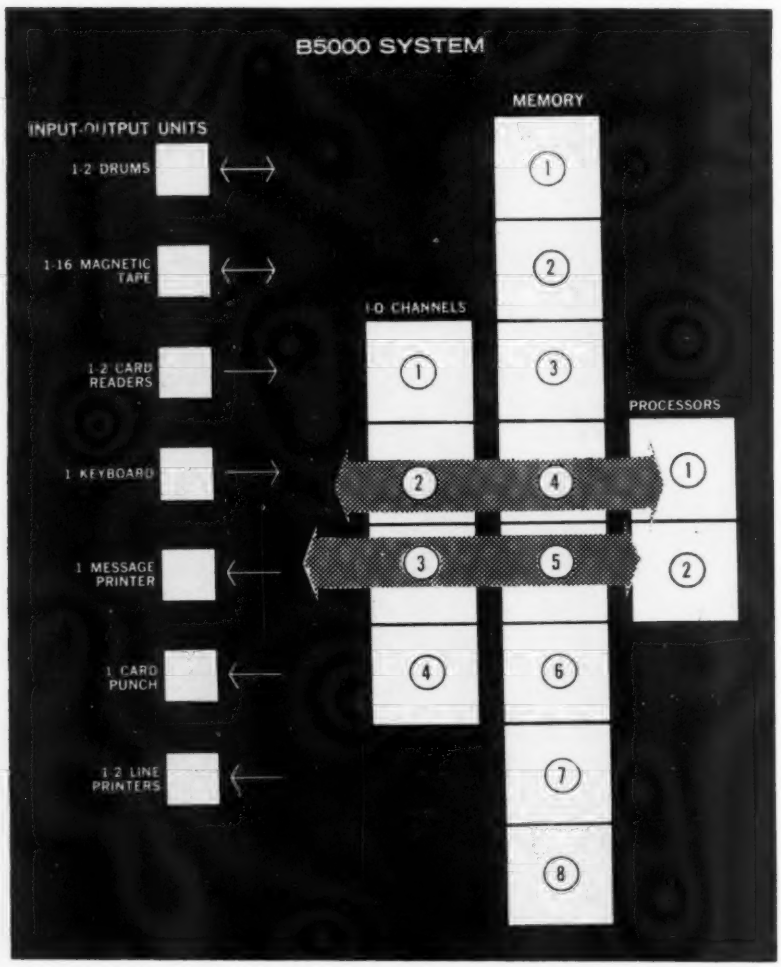
"The computer industry, much like the automotive industry a few years ago, has been engaged in a horsepower race," Eppert declared.

It is not unusual for a team of experts to spend months writing and "debugging" a computer program for a complex problem that only requires a few minutes to solve once all data are entered into the computer, he continued.

"We felt it was time to stop and take stock. We wanted to get back to the basic objective of a computer: to solve problems without creating even bigger ones.

"High speed is vital to a computer; but it must be used continuously to pay off for the user," he said.

"Computer engineering technology in providing high internal machine speeds far outstripped the



Maximum B5000 Burroughs Information Processing System shown in flow chart above consists of various input-output units (left), computer memory and processors (right).

ability to use this speed efficiently. And every time the speed was increased, it became even more difficult to communicate with the computer and control its behavior.

"Because users had to communicate with previous electronic computers in complex numerical codes, a language foreign to them, they devised highly complex methods to bridge the communications gap. In spite of these efforts, the excruciating detail of computer programming continues to tie up costly scientific, engineering, and business talent.

"The B5000," Eppert asserted, "will drastically reduce programming costs because the system is the first ever specifically designed to accept programs written in algebra (for scientific and engineering problems) or in English language statements (for business data processing).

"This machine doesn't just bridge the communications gap, it eliminates the gap itself by removing the problem."

The built-in ability to process programs written in the Common Business Oriented Language (COBOL) and Algorithmic Language (ALGOL), will be standard with every B5000 computer system.

The B5000 computer systems will rent from $13,500 to $50,000 a month, depending on the size of the system. Sale prices will range from $540,000 to $2,000,000.

First deliveries will be made in 18 months.

New DACOM system prints 20,000 characters a second

Recordak Corp., the Eastman Kodak subsidiary in the microfilm and business systems field, has introduced its DACOM (DAtascope Computer Output Microfilmer) system. DACOM, a high-speed printer for computers, converts information from magnetic tape into alpha-numeric characters.

The system's print-out speeds vary with the type of material to be reproduced, but maximum speed is 20,000 characters a second. This means that 20 pages of business data, containing a thousand characters on each, can be transformed to 16mm. microfilm frames in a second. Or a complete page of data that contains 8,064 characters can be reproduced in a half-second.

Recordak DACOM system can be used on-line with any computer in the IBM 700 series or off-line with any computer that produces magnetic tape. Price is $300,000.

A single plastic program card is used for automatic programming control of Smith-Corona Marchant's Typetronic 6615, a desk-size electronic computer with typewriter.

The system can be used as on-line equipment with any computer in the IBM 700 series, according to Recordak, or as an off-line printer with most other computers. For off-line use, DACOM can be adapted to any computer that produces magnetic tape.

Delivery time ranges from 18 months to two years, and the selling price for a DACOM system is approximately $300,000. No information on leasing arrangements has been made available.

Smith-Corona shows new, desk-size computer

Smith-Corona Marchant, one of the few business machine manufacturers that had not gone into electronic data processing, jumped into

Farrington device breaks "input bottleneck"

the field with two solid state electronic computing machines. The two units are the Typetronic 2215, an automatic writing system, and the Typetronic 6615, a desk-size computer with typewriter input-output.

The Typetronic 2215, which ranges in price from $4,500 to $6,500, can be used for invoicing, billing, order writing, and other applications where automatic typing can be utilized. It is activated by punched paper tape (six through eight channels at present, although five-channel tape will be used soon) or edge-punched cards. It produces paper tape, as a by-product, for later sales analysis.

The 6615 also operates from edge-punched cards or paper tape, and variable data are entered manually through the electric typewriter. The machine has an eight-millisecond add time and a zero access time. Programs are inserted into the computer rapidly on plastic (Mylar) program cards. Cost of the 6615 ranges from $6,000 to $8,000. Both machines are available within 30 to 90 days and may be leased at a rate of from 1.5 to 3 per cent of the purchase price per month.

1 MAGAZINE LOADING—no more old-fashioned hand-threading... just drop on the exclusive Norelco tape magazine – it's fumble-proof, jam-proof, takes just 2 seconds!

2 ONLY FIVE CONTROLS—comparable machines use as many as 10 for all functions: dictating, playback, fast-forward, fast-rewind, quick-review, quick-erase and stop.

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In Canada, the Norelco '75' is known as the 'Philips' dictating machine and is distributed by Philips Industries, Ltd., 116 Vanderhoof Avenue, Toronto, Ontario.

(Circle No. 47 on Reader Inquiry Card)

Farrington page reader translates data to tape

Intelligent Machines Research Corp., subsidiary of the Farrington Company and pioneer in the field of optical scanning, demonstrated the first alpha-numeric, solid state, commercial page reader to break data processing's "input bottleneck" at a press conference in Washington, D.C.

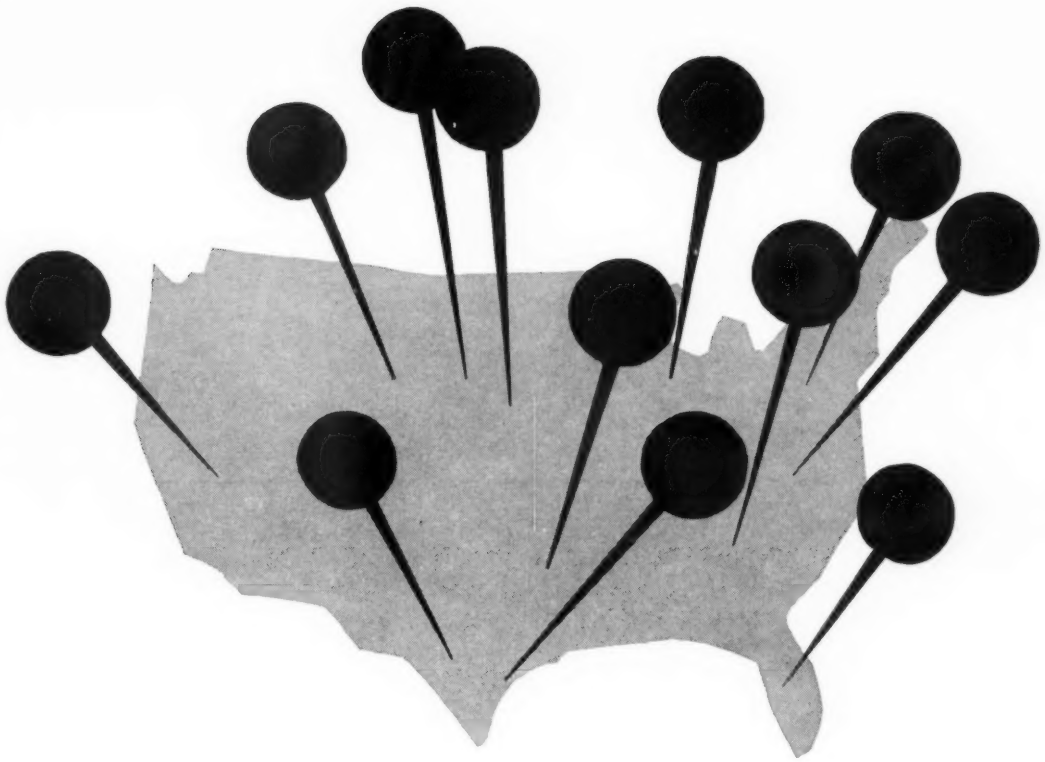
The page reader scans ordinary business documents and instantaneously translates the information it reads into punched paper tape at the rate of 240 characters a second. Farrington spokesmen predicted that the company could make a machine to read 340 characters a second by using magnetic tape.

Developed for the U.S. Air Force under government contract, the optical readers are going into operation in the insurance and utility industries. Six insurance companies have already ordered the system, which ranges in price from $95,000 to $175,000.

IBM pays $9.18 a share on $1.4 billion gross

International Business Machines Corp., giant of the data processing industry, announced a whopping $1.4 billion gross income for 1960. This is an increase of more than $126 million over 1959, according to IBM President Thomas J. Watson. Corporate earnings before taxes, meanwhile, were more than $345 million in 1960, up $45 million.

Earnings of $9.18 were paid on



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NEW CONCEPTS IN PRACTICAL OFFICE AUTOMATION

(Circle No. 57 on Reader Inquiry Card)

each of IBM's 18,310,954 shares outstanding at the end of the year. (Last month IBM stock was selling in the neighborhood of $650, a healthy increase over the 1960 low of $407). Major stimuli for this growth, Mr. Watson noted in his message to stockholders, were sales of the 1401 electronic accounting system (4,000 orders to date) and the introduction of the IBM Executary line of dictating equipment.

At the end of the year, IBM had 127,432 stockholders and 104,241 employees in its world-wide operations.

ADAPSO organized by computer service centers

Leading American and Canadian companies in the computer and punched card service field have announced formation of the Association of Data Processing Service Organizations (ADAPSO). The new association consists of companies that service clients through data processing centers, as distinct from companies that only manufacture and rent or sell equipment.

The association, which consists of representatives from both independent service centers and manufacturers' centers, seeks to establish performance and ethical standards. Membership is limited to companies that perform data processing work for customers on their own premises.

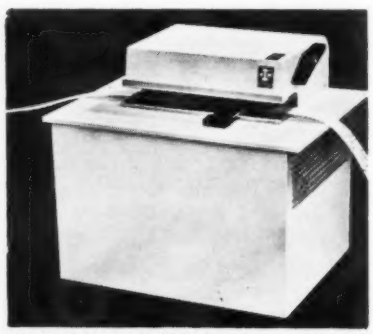
Headquarters are at 1000 Highland Ave., Abington, Pa., and the executive vice president is W. H. Evans.

Control Data releases Model 350 tape reader

Control Data Corp. announces the release of its Model 350 high-speed punched paper tape reader. The Model 350 was designed for use with the company's 1604 and 160 computers, but is now being offered for general sale.

Model 350 is a photo-electric reader that reads five-, seven-, or eight-level punched paper tape at the rate of 350 characters a second. The reader uses solid state components throughout and is available either with or without reading circuitry.

The tape reader is currently in production, and small quantities are available from inventory; delivery of large quantities of units require approximately 90 days.



Model 350 reads 350 characters a second. Control Data's high speed punched paper tape reader, originally designed for use with its own computers, is now being offered for general use.

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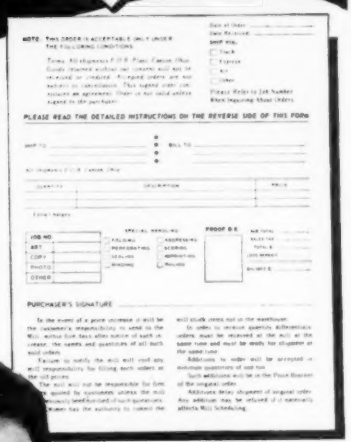

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(Circle No. 68 on Reader Inquiry Card)

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(Circle No. 54 on Reader Inquiry Card)

LISTEN TO YOUR SYSTEMS MAN!

By CHARLES H. GODDARD
Vice President, Voicewriter Division
Thomas A. Edison Industries

THE ROLE of the systems man is becoming increasingly important to the smooth functioning of a business. One major reason for this lies in the shift from repetitive work to creative effort on the part of employees on all levels. As business machines take over more tasks previously performed by employees, the employee, in turn, becomes the user, director, programmer—whatever term you wish—of the machines in the office. His ultimate responsibility is greater, his individual initiative, more called upon.

Coordinating the new individual responsibility with the world of office machines is the important role of the systems man. It is his task to translate the possible benefits that can accrue from the use of machines into concrete operating benefits for his company. He must, in other words, see that the tools are used effectively on both the group and individual level.

How does the role of the systems man translate itself into actual working terms? The following five facets of the systems man's job may shed light on this question.

1. The systems man must be informed as to the details of all job functions within the company. He must know the work load of a certain job, the variations in the work load, the reason for the work being performed in that job, the flow of work both to and from the job. With an extensive knowledge of methods and equipment, he must be alert to the improvements in tools for each particular job, and not only which tool should be provided for the job, but when it should be introduced.

His voice must be heard

2. The systems man requires a strong coordinating sense. How will the introduction of a new machine designed to expedite job performance at one station affect the further processing of that work at another work station? Will a new machine provide for one executive's secretary to expedite his work while that of the others is left to proceed at a slower pace?

3. The systems man must have a voice that is heard in the company. His recommendations—based on performance, requirements, and the tools and people that bring the two together in effective company operations—should be presented forcibly and clearly. Too often management engages the services of a systems man and buries his recommendations in a good intentions file. This is not always the fault of management. Many systems recommendation reports are phrased in a language comprehensible only to another systems man. Top management cannot clearly see the benefits of a recommended procedural change because the recommendations are not clearly presented.

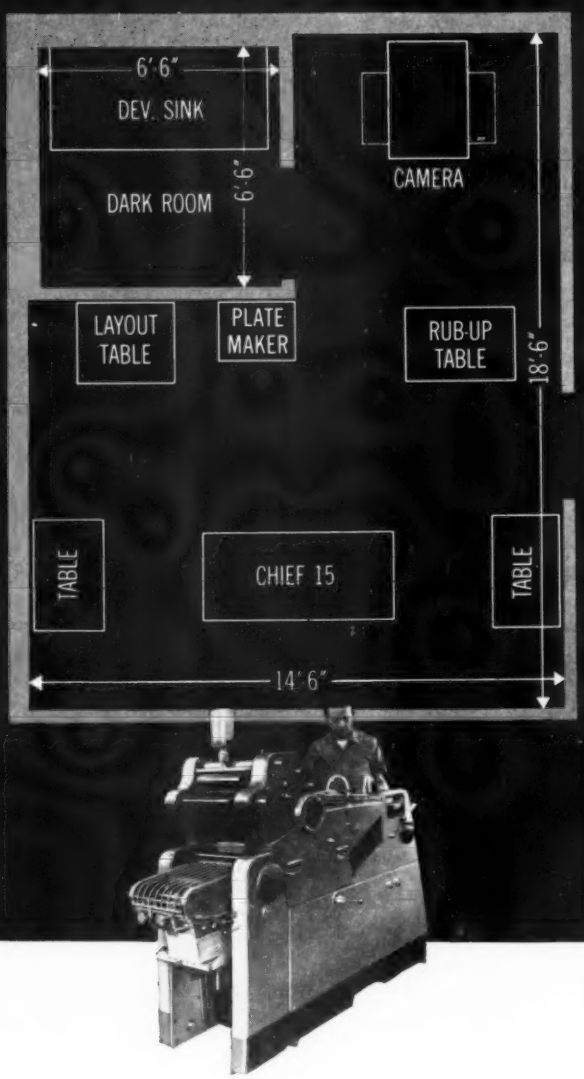
4. The systems man must know and like people. Systems are at best a way of letting people function more fully, of helping them to realize their potential as human beings and members of a business community. The same clarity and persuasion that should be applied in recommendations to management should be used in introducing approved methods and procedures to individual employees.

Not only in the field of data processing—where an entire system displaces clerical functions—must time be taken to explain to employees the reasoning behind change. Confronted with a new business machine of any type, the average employee may react with gratitude, uncertainty, fear, or indifference—depending upon the method of its introduction. The employee reaction is important because it often determines the performance of both the employee and the machine.

5. The systems man acts as the representative of his company to the business community at large. It is the systems and procedures which he creates that affect sales and salesmen, customers and stockholders, employees and friends. The systems in use at his company can present an image to the world of a fine progressive company—or of a company living in the past.

The systems man is an important man with a vital job to do. His findings and recommendations can often make the difference between profit and loss in a competitive business environment. It is a wise management that listens carefully when the systems man talks.

This profitable offset department can be YOURS for less than a dollar an hour!



For less than a dollar per *working hour*, you can purchase a complete ATF offset department, including: press, camera, darkroom sink, negative layout table, platemaker, and utility table. If you have some seldom-used equipment to trade in, chances are you will need little or no down payment.

Or you can lease the complete "package"—or any part of it—without trading in any equipment or making a down payment.

Either way, you get brand new equipment—and only what you need—on the easiest terms. You can pay as you go and make a profit as well.

Heart of this plan is the ATF Chief 15, the small press with the big press features...the press which has been chosen by over 1500 professional printers. You can see this press and the related "package" equipment in operation at your nearest ATF Branch Office; or your ATF Representative will supply full details, including a folder, "How to Set Up for Offset," which outlines various plans and choices of equipment. If you prefer, use the coupon below.

ATF

ATF Type Faces used in this advertisement: heads, Craw Clarendon; text, Bodoni Book; coupon, News Gothic Condensed.

American Type Founders

American Type Founders, Dept. B
200 Elmora Avenue, Elizabeth, N. J.

I'm interested in your "Offset Package Plans" on a ☐ purchase ☐ lease basis.

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Company_____

Street and Number_____

City_____ Zone_____ State_____

(If you have trade-in equipment, list descriptions, models, serial numbers)

(Circle No. 6 on Reader Inquiry Card)

Conclusion —

WASHINGTON ACTIONS FORESHADOW END OF COMPULSORY RETIREMENT

Worker's own interest in continuing on job called key factor in his effectiveness.

By ROBERT M. SMITH

"IT'S interesting to note differences in occupations. Lawyers never retire, do they? Or doctors. They die in their offices. In fact, self-employed people tend to continue working. Yet for all these people there must be certain criteria of performance —perhaps the ability to make a profit for themselves. What I am trying to suggest is that we don't use as much as we know about these various factors to the best advantage of the company, the economy, or the individual."

The speaker was Dr. Ross A. McFarland, Harvard School of Public Health, participating in a recent panel discussion at a conference on older employees sponsored by the Employment and Retirement Section, National Council on the Aging, in New York City. His remarks emphasized one of the most vexing problems facing American businesses today—whether mandatory retirement at age 65 is fair to the individual employee, and is in the best interests of the company. It is a problem that will grow more difficult in the years ahead.

Moreover, it is a problem in terms of the economy as a whole because the Social Security System and most private pension plans are geared to mortality tables that are being continually outdated by medical advances. Medicine is now talking fairly confidently of an *average* life expectancy of more than 100 years by the year 2000. This is based on anticipated major breakthroughs in the fight against the two major disease groups of old age — the cardiovascular diseases, and cancer.

Obviously, any such radical change in life expectancy in a mere forty years implies a continually expanding life span for people now in their thirties, their forties, and their fifties. They may not live to be one hundred, as the child born in 2000 could have every expectation of doing, but they will live a great deal longer than those who designed present retirement policies and Social Security provisions ever assumed they would.

If they are retired arbitrarily at 65, it means that an increasing load will have to be borne by a Social Security system funded mainly by current rather than past payments. It means also that eventually pension rates will have to be raised, assuming that the anticipated extension in the life span does take place.

These problems were brought into sharp focus by the recent White House Conference on the Aging, and the recommendations of the Kennedy "task force" on the aging. The White House Conference group recommended periodic Congressional review of Social Security benefits to keep them in relation to a rising cost of living. It also recommended adoption by industry of flexible retirement policies. Conference groups also urged medical care for the aged under the Social Security system.

Provisions on medical care for the aged under the Social Security system, of course, will probably have rougher going in Congress than will changes in the level of Social Security payments, and provisions for higher government benefits for those who postpone their retirement to some point beyond 65. After all, the Kennedy-sponsored bill for compulsory government health insurance was defeated in the last session of Congress, and the present Congress is of a slightly more conservative cast than the last one. However, at that time the Administration itself opposed the Democrat-sponsored bill, while the new Administration is composed of the very forces and men who sponsored last fall's defeated legislation. So it seems very probable that some program to include medical care benefits, at least at minimum levels, will be enacted relatively soon.

Adoption of such a government program would seem, however, to be one more factor leading to a total reassessment of the entire worker retirement age question. Undoubtedly, under existing conditions, one of the factors in many companies' reluctance to continue employment of workers past 65 has been a fear that failing health might leave the company in a position where it would be obliged to maintain workers on the payroll through periods of illness, or even, in some cases, assist with their medical bills. This would be a particularly strong factor in the retirement age attitude of companies carrying catastrophe medical insurance plans on their employees, since the rate for such plans would rise very sharply for the elderly. With a gov-

ernment program in effect, however, it seems very probable that a company could continue to employ a worker who has passed the age of 65, but cut off all medical insurance for him at that age. If he should become seriously ill, ill enough to be forced to leave work, he would immediately become the beneficiary of his company pension, his Social Security benefits, and health protection since he would be protected under the government program.

And, in the last analysis, there is a serious question whether the economy can easily bear the cost of a large share of the population on a government benefit plan. If the life expectancy should reach 85—a figure that seems within sight now—this would mean, if mandatory retirement were held at 65, that nearly half the nation—the youngsters under 20 and the older people in the 65 to 85 bracket would be supported by the other half.

Thus, from every point of view it would seem wise and necessary for business to re-examine the whole question of retirement ages. It would make sense in terms of business' own tax load, and the tax load applying to its employees.

Against these considerations, of course, must be equated the usefulness of older workers in the company's work. What are their qualifications? What are their drawbacks?

Again, the experience of firms represented at the Conference on Older Employees sponsored by the National Council on the Aging is helpful. The retirement policies of eight major American companies—were outlined by speakers from the companies.

Retirement policies among the various companies represented ranged all the way from normal retirement age 60; compulsory retirement at 65 for A.T.&T. to normal age 65, mandatory, 70 for Scovill Manufacturing Co. American Telephone and Telegraph, at the low end of the scale, based its policy on the theory that "many people at age 65 are still able to do a very good job, but many more are not."

Furthermore, in the words of H. K. Onstott, assistant vice president:

"When we are talking about cost of pensions, let's not forget why we put in a pension in the first place. Could we save money if we did not have a pension plan? Actually, we don't think so—and that's the reason we adopted a plan. We say that we need to keep moving our people, and particularly at the top we need to keep taking them out. That way, we get movement—something which is attractive to younger people interested in opportunities for advancement."

Con Edison's program

Dwight Sargent, of Consolidated Edison Co. of New York, speaking of his company's program, said:

"On January 1, 1958, by agreement with the union, we changed the mandatory retirement age for men from 65 to 68 and for women from 60 to 65, without changing the normal retirement age of 65 and 60 respectively. In effect, we adopted selective retirement on a limited trial basis.

The results: in the first six months of 1960, of 262 people reaching normal retirement age, 42 per cent wanted to retire; 58 per cent wanted to continue working. Of the latter group, over half were acceptable to management and were allowed to stay on the job.

Moreover, Consolidated Edison found significant differences between preferences according to the employee category:

"Why do people want to retire?" Mr. Sargent asked. "There are, of course, many reasons. But I did a little nose-counting the other day to see whether there were any differences between blue-collar and white-collar employees. Mechanics, operating shift people, and persons doing hard physical labor tend to get a little tired by age 65, whereas engineers, clerical people, and other white-collar employees tend to want continued employment.

"About 450 men in our company reach age 65 annually. About one-third, or 150, elect to work beyond age 65. Of the 150 who elect to continue, perhaps 30 drop out at the end of the first year, 15 at the end of the second year. I estimate that the saving in pension costs runs between three and one-half and five per cent.

"If our experience at Consolidated Edison were extended to 110,000 people throughout the economy who were permitted to continue working as a result of changes in retirement policy, Social Security would not pay out $158,000,000; private pension plans would not pay out $130,000,000, and the persons working would pay Social Security taxes of $13,000,000, State and Federal income taxes of about $55,000,000, and by continuing to work, would earn $550,000,000."

Industrial studies indicate that older workers remain highly effective in precise, highly repetitive work.

Pro: Flexible retirement protects the company's human investment

Philip J. Lombardi, regional training manager, Montgomery Ward, describing that company's flexible retirement system, outlined two main advantages the firm believes it gains from allowing people to work beyond 65:

1. Flexible retirement permits the company to retain competent, well-trained employees. It permits the company to continue to utilize the company's investment in the experience and know-how of long service people.

2. Under most retirement plans the employee who works after age 65 costs the retirement plan less than the employee who retires at age 65.

Major disadvantages of flexible retirement, according to Mr. Lombardi, were:

1. Judgment is required to appraise the abilities of older employees. (Montgomery Ward reviews the work performance of every employee over age 65 at six-month intervals.)

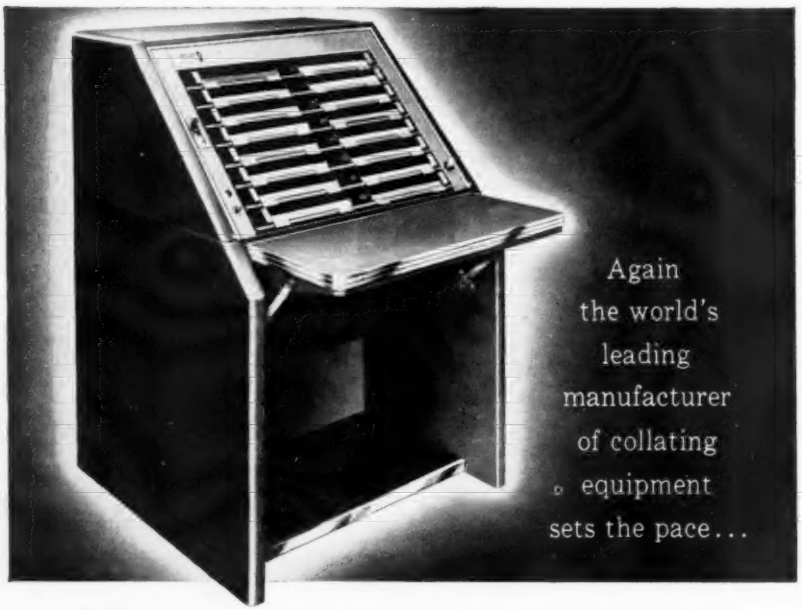
2. Selective retirement necessitates forcing some people to retire involuntarily. These people may have a feeling that they have been victims of discrimination.

3. Flexible retirement programs are more expensive to administer than compulsory programs because of the periodic re-evaluations of work performance required.

Perhaps the most significant comments at the conference, the clue to the reason why companies which have experimented with flexible retirement plans seem fully satisfied, came from Dr. Ross McFarland, of the Harvard School of Public Health. His report indicated that those who *wish* to remain on the job are very often those who can compete most successfully with younger workers on the job. The very desire to stay in the work force, in other words, would indicate that the individual would remain a competent and effective worker.

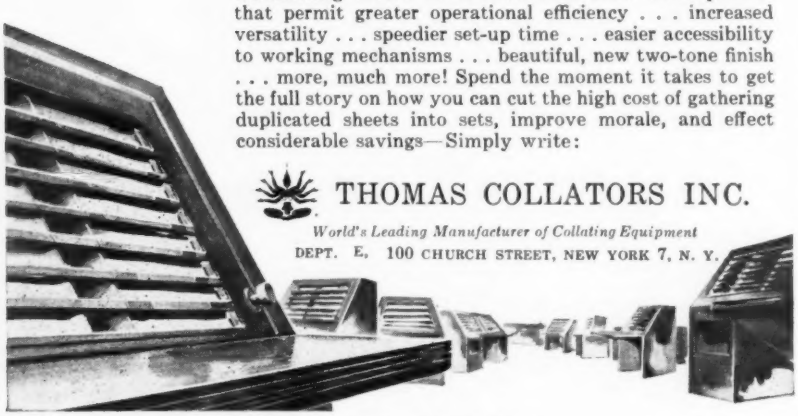
"All the evidence from psychological studies of aging shows that if an older person wishes or wants to excel or stay on a job, or learn a new one, he can do so," the doctor reported. "Being wanted is also essential to successful performance."

This may be the reason the self-employed so seldom quit, the doctors and lawyers die in their offices. It's a factor which might seriously be considered by companies now firmly wedded to compulsory retirement at age 65. If a man or woman is good on his job, if he's physically and mentally capable of performing it, and if he wants to go on working, perhaps it's not only harsh in personal terms to retire him against his will. It might be shortsighted in terms of the company as well. A perfect example is that of a research director who was retired at age 65 by a noted drug firm. He didn't want to retire, and he found another firm, which had more liberal standards and was glad to hire him. Eight years later, at the age of 73, he announced a new drug discovery — one of the most noted of the current miracle drugs, and, unfortunately for his former employer, one that was completely protected by patents.



10 New Floor Models for '61

For 1961, Thomas Collators announce engineering and design advancements for their new line of 8, 10, 16, 20 and 32-sheet floor models that help surpass their own outstanding record of achievement. New developments that permit greater operational efficiency . . . increased versatility . . . speedier set-up time . . . easier accessibility to working mechanisms . . . beautiful, new two-tone finish . . . more, much more! Spend the moment it takes to get the full story on how you can cut the high cost of gathering duplicated sheets into sets, improve morale, and effect considerable savings—Simply write:



THOMAS COLLATORS INC.

World's Leading Manufacturer of Collating Equipment

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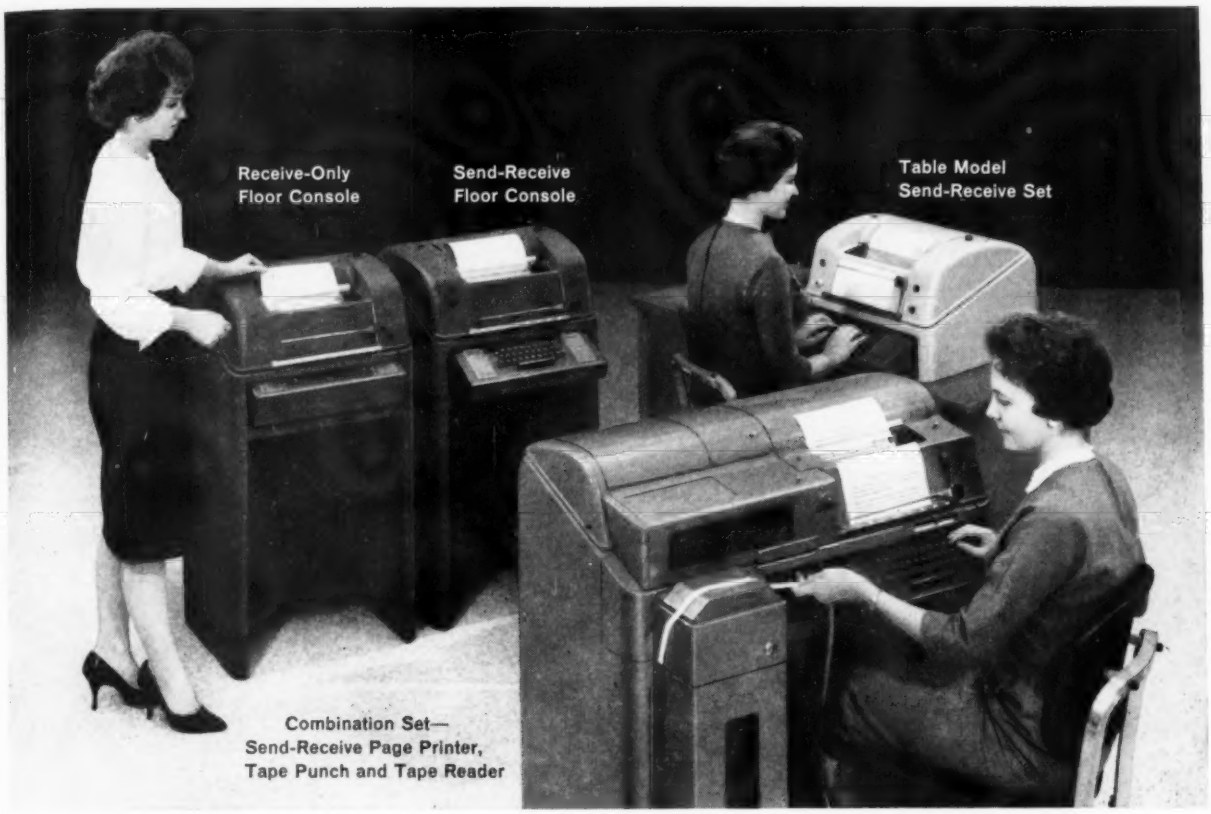

Which Teletype printer is best for you?

Which of these Teletype Model 28 page printers is best for your message and data communications needs? Each will perform the basic function of all Teletype equipment—to flash information over long or short distances. But in addition, each has varying capabilities to meet the requirements of the individual user:

Send-receive page printer in console—probably Teletype's most familiar product; for sending as well as receiving page copy.

Receive-only page printer in console—the same machine, but without a keyboard. For use where information need only be received, not sent. No operator is required.

Table model—with or without keyboard . . . similar model available for rack mounting.

Combination set—a complete message center in one compact cabinet. In addition to page printer and keyboard, it contains facilities for preparing punched tape and for transmitting and receiving via tape.

All of these Teletype Model 28 page printers feature the Stunt Box, a built-in "programming" mechanism that will inexpensively handle a wide variety of remote control and switching tasks such as automatic station selection. All models can be supplied with sprocket-feed and tabulating mechanisms for use with multi-copy business forms. All are available, too, in a choice of cabinet colors to match office decor.

Teletype Corporation manufactures this equipment for the Bell System and others who require the utmost reliability from their data communications. Teletype equipment can be used with Data-Phone and other communications services.

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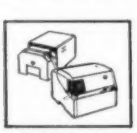

Tape Reader and Typing Tape Punch

Send-Receive Page Printer

Automatic Send-Receive Set

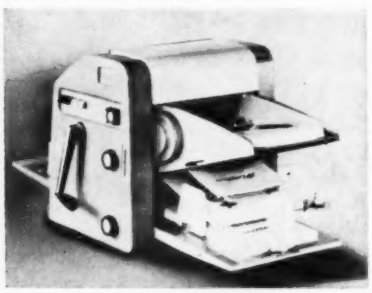
Free Model 28 Line folder. Write Dept. 36-C, 5555 Touhy Avenue, Skokie, Illinois

(Circle No. 63 on Reader Inquiry Card)

NEW SYSTEMS AND EQUIPMENT

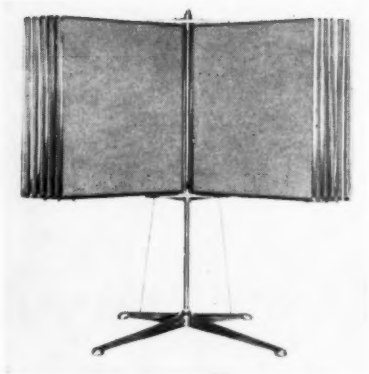
▲ Acoustical enclosure N-1

Noise from the billing machine above is dampened by the "Noishield" Acousti-Closure, series OEA. Enclosures are also available for a variety of other office equipment. Industrial Acoustics Co., Inc., 341 Jackson Ave., New York 54.



▲ Mimeograph machine N-2

Mimeographing and collating can be accomplished in one run by the Rex-Rotary model D-490 twin cylinder mimeograph machine. The interleaver collates a previously printed sheet as the duplicator prints the second, or enclosure, sheet Rex-Rotary Distributing Corp., 387 Park Ave. South, New York 16.



▲ Floor display unit N-3

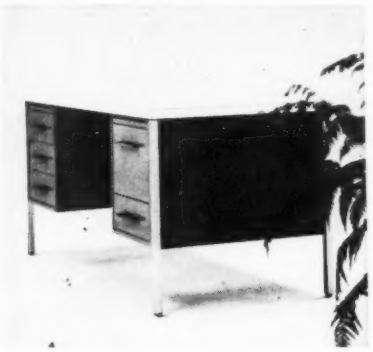
The free-standing floor display unit is available in crinkle antique bronze frames or frames finished in olive green. Wings are made in 20 x 30 or 30 x 40-inch sizes. Each frame can be equipped with 7 or 12 wings. Jayem Sales Corp., 230 Fifth Ave., New York.

◗ Towel cabinet N-4

The "Super Singlefold" paper towel cabinet has a capacity of 5½ packages or 1,300 towels. Singlefold towels are extracted from the cabinet by pulling; cabinet is white enamel. Fort Howard Paper Co., Green Bay, Wisc.

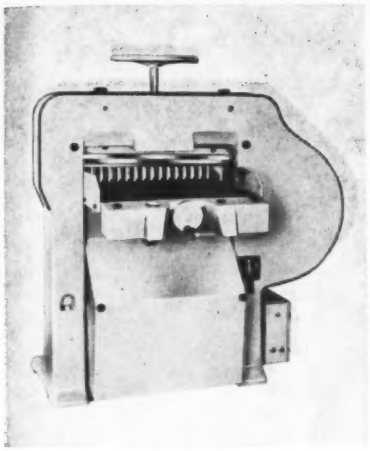
◖ Communications System N-5

Internal communications are provided automatically by the "Dialmaster" Model TSB-100 switchboard. When fully equipped, the "Dialmaster" has 14 links to accommodate 14 conversations between 28 telephones on the system simultaneously. Stromberg-Carlson, Commercial Products Div., 1400 North Goodman St., Rochester 3.



▲ Office furniture N-6

Simple lines characterize the new "Olympic" series of contemporary office furniture. The lightweight "Spiracor" top is guaranteed not to warp. Peerless Steel Equipment Co., Unruh and Hasbrook Avenues, Philadelphia 11.

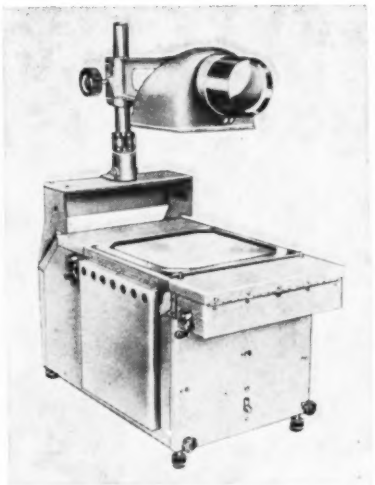


◀ Paper cutter **N-7**

The "Michael-Miracle" power paper cutter has a motor that runs only when the actual cut is made and provides an automatic return of the knife after each cut. Available in 22⅝ and 28¼-inch sizes, the cutter is equipped with an electro-magnetic brake system and a two-handed electric jam-proof button operation with safety lights. Michael Lith Sales Corp., 143 W. 45th St., New York 36.

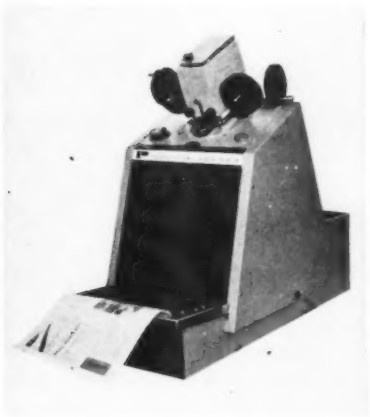
▲ Desk Pad **N-8**

A pad made of heavy weight acrylic plastic protects the desk surface and allows the wood grain of the desk to be seen. The pad is available with ends of natural wood, metal, leather or Naugahyde trimmed with brass or aluminum. McDonald Products Corp., 239 Seneca St., Buffalo 10, N. Y.



▲ Slide viewer **N-9**

The Master Vu-Graph 7700 accepts 10 x 10-inch transparencies and can project a 1000-watt, full-color image to sizes as large as 13 x 13 feet. The projection head stands a maximum of 17½ inches high; machine also has a built-in cellophane roll device. Charles Beseler Co., 219 S. 18th St., East Orange, N. J.



◀ Reader-printer **N-10**

Black-on-white 8½ x 11-inch prints can be produced in less than a minute from microfilm when using the Documat Reader-Printer. The operator examines filmed images on a 11 x 11-inch screen and pushes an exposure button to automatically produce a black-on-white print from a roll of silver-sensitized paper. Photostat Corp., 1001 Jefferson Rd., Rochester, N. Y.

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Free "idea kit" shows you how!
Why lose labor time in the mailing room or in the office with conventional gummed flap envelopes?
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338
(Circle No. 64 on Reader Inquiry Card)

NEW SYSTEMS AND EQUIPMENT

◗ Movable partitions **N-12**

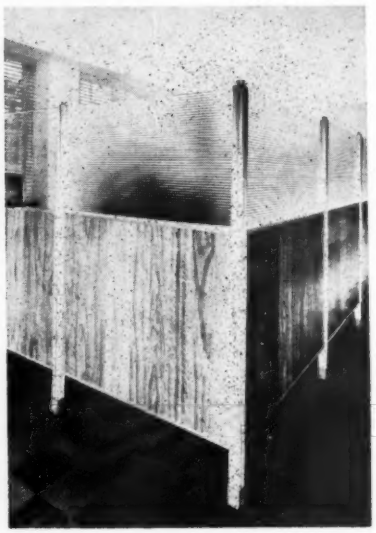
Movable partitions are styled with aluminum components complementing a wood grain paneling. Sturdy aluminum posts are kept rigid through a special locking device. Stelzer Moldings, Inc., South Bend, Indiana.

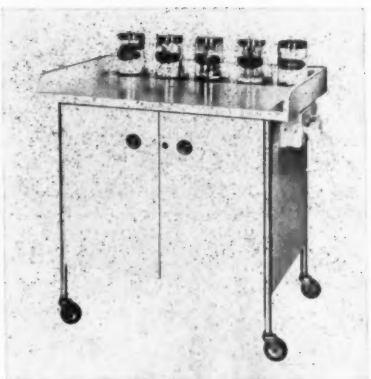
◗ Clinic cart **N-13**

The mobile clinic cart is constructed of satin chrome finished tubular steel and ¾-inch wood veneered panels finished in white enamel; top and retainer rails are faced in white, laminated plastic. Unit can also be obtained with a complete dispensary kit. Fleetwood Furniture Co., Zeeland, Mich.

◖ Telephone spray **N-11**

A brief spray of Tele-septic is said to sanitize the telephone mouthpiece on contact and provide ressidual germ-killing action up to six days. The American Tele-septic Co., Inc., 507 Fifth Ave., New York.





◖ Desk accessories **N-14**

Cigarette box, utility boxes,, and business card holder are a few items available in the 700 series of desk accessories made of walnut aluminum laminate. Peter Pepper Products, Inc., Palos Verdes Estates, Calif.

▲ Mail bag **N-15**

A key-operated, tumbler-style lock, riveted to a heavy leather patch, gives added protection to a 14 x 18-inch heavy canvas mail bag. Bag handles are plastic; trim is genuine leather with a one-piece molded rubber bottom. Can-Pro Corp., 19 E. McWilliams St., Fond du Lac, Wisc.

▲ Storage areas **N-16**

Storage areas can be easily erected with "Slotted Angle" construction pieces, in 12 and 14 gauge steel. It is available in baked enamel colors or galvanized finish. Frontier Mfg. Co., 11200 Harry Hines Blvd., Dallas 20, Texas.

DATA PROCESSING BECOMES COMPANY-WIDE

AMA conference will stress new role of data systems

The company-wide data processing network has passed from wishful thinking to reality.

The American Management Association's seventh annual Data Processing Conference and Exhibit will open Monday morning, March 6, in the Statler-Hilton Hotel, New York.

The three-day gathering, traditionally a meeting ground for exploring new ideas in data processing, will be sponsored by the Administrative Services Division (formerly the Office Management Division) for the first time. The event was previously handled by AMA's Finance Division. This change reflects the increasing importance given to the company-wide administrative function, as stressed at AMA's 1960 fall conference.

Beginning with discussions of the economic realities of electronic data processing in practice and management information systems in focus during the first morning, the conference will go into concurrent sessions for the duration of the gathering. A special feature will be the exhibit of data processing equipment scheduled for Tuesday afternoon, March 7. At least 16 firms involved in the data processing field have announced plans to participate.

Speakers include Stevens L. Shea, vice president of data processing at American Insurance Co.; Edmund D. Dwyer, chief of the Navy Management Office; Robert Howe, director of administration at IBM; A. E. Riddle, director of office administration at Colgate-Palmolive; Jack Haslett, manager of methods and procedures at Shell Oil; Robert Stewart, staff assistant to the controller, American Bosch Division; and Norman Brown, vice president of Steel Company of Canada.

AMA Conference Schedule

Monday, March 6

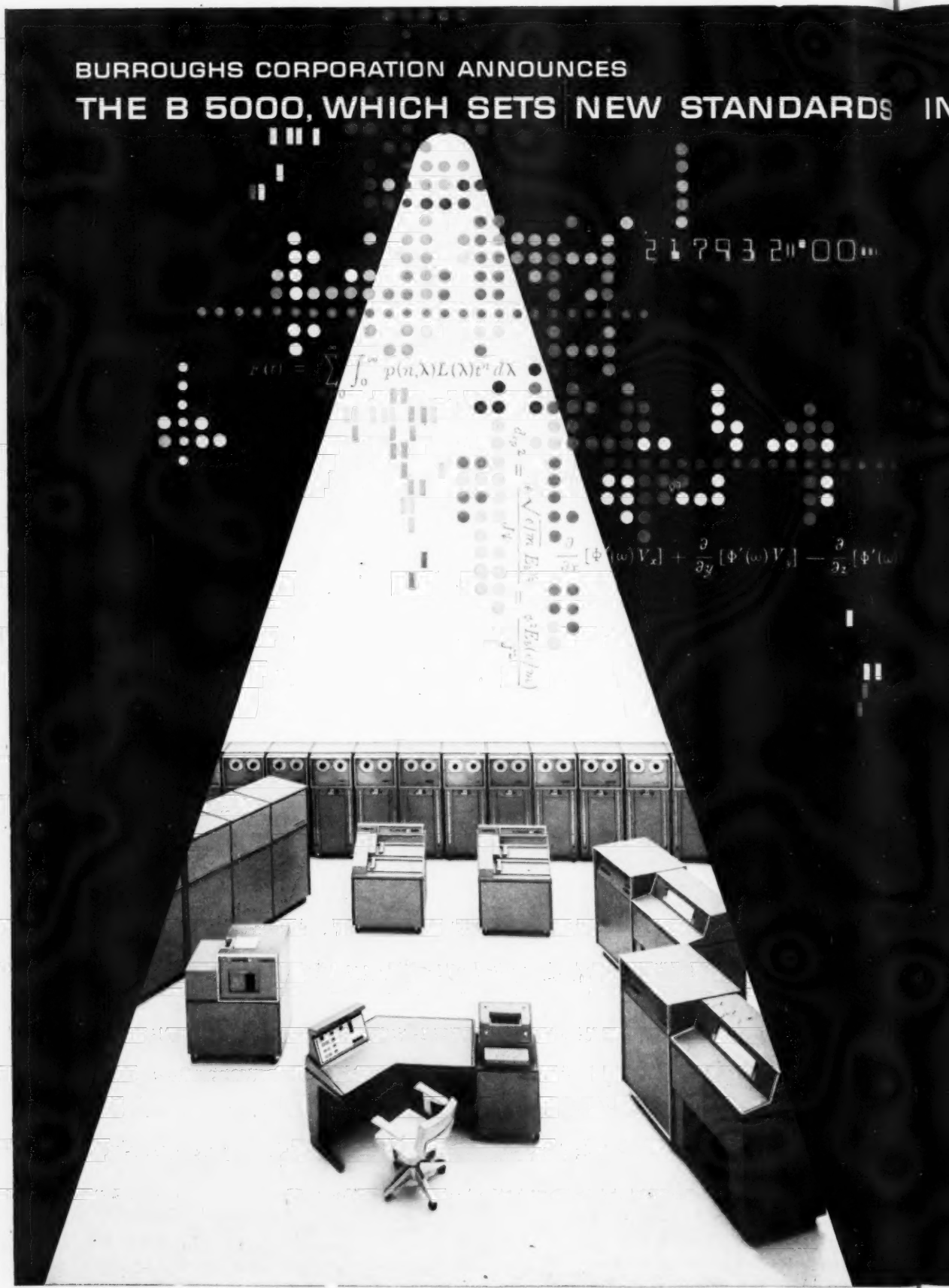
9:30	**Conference opening**
10:00	**The Economic Realities of EDP in Practice**
11:00	**Management Information Systems in Focus**
12:30	**Luncheon**
2:00	**Advances in Information Retrieval and Data Acquisition** **Information Systems for Managing the Overall Business**
3:00	**Advances in Data Collection and Source Data Automation** **Information Systems for Management of Marketing**

Tuesday, March 7

9:30	**Advances in Data Transmission and Reception** **Manufacturing Management Information Systems**
11:00	**Advances in Data Input Methods and Systems** **Product and Process Development, Design and Control by Computers**
2:00	**Exhibit of Data Processing Equipment**

Wednesday, March 8

9:30	**On-Line and Real-Time Data Processing Methods** **Finance and Accounting Management Information Systems**
10:30	**Advances in Data Output Methods and Systems** **Purchasing and Inventory Management Information Systems**
12:30	**Luncheon: Data Processing and Management Information Systems in Perspective**
2:30	**Buzz Sessions—An Analysis, Review, and Projection of Data Processing and Information Systems**


BURROUGHS CORPORATION ANNOUNCES
THE B 5000, WHICH SETS NEW STANDARDS IN

DS IN PROBLEM SOLVING & DATA PROCESSING

The new Burroughs B 5000 Information Processing System is a decided departure from conventional computer concepts. It is marked by dramatically different machine logic and language. It thinks in the language of your problems. It is an integrated hardware-software package that sets:

NEW STANDARDS OF PROGRAMMING EFFICIENCY

The B 5000 is the first system specifically designed for efficient use of the problem-oriented languages of ALGOL and COBOL. It swiftly translates them into efficient machine-language programs, compiles at speeds 20-50 times faster than any currently designed computers. Result: unprecedented savings in programming cost and time.

NEW STANDARDS OF PROGRAM-INDEPENDENT MODULARITY

Any B 5000 program will work with any B 5000 system configuration. It is possible to add memory modules, input/output units—even a functionally independent second central processor. Result: you can closely gear system expansion to growing workloads, without time-consuming reprogramming; you have effective protection against obsolescence.

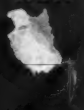
NEW STANDARDS OF EFFECTIVE MULTIPLE PROCESSING

The B 5000's normal mode of operation is multi-processing. It can simultaneously process several unrelated problems, both scientific and commercial, under the supervision of its Master Control Program. Programs written independently can be processed simultaneously. Result: minimum idle component time, maximum self-regulating system efficiency.

NEW STANDARDS OF AUTOMATIC OPERATION

The Burroughs B 5000 incorporates a complete set of operating, monitoring and service routines. Its Master Control Program automatically schedules work and assigns memory and input/output units. Result: system idle time and human intervention are reduced to a mimimum—important time and dollar savings.

NEW STANDARDS OF SYSTEM COMMUNICATION



The new B 5000 features completely flexible communication among its components, permits simultaneous on-line/off-line operation. Any input/output channel communicates with any peripheral equipment and any memory module. Result: greater flexibility and reliability in systems use.

NEW STANDARDS OF THROUGH-PUT PER DOLLAR

Along with its remarkably advanced logic and language, the B 5000 offers many other important features. Examples: High internal speed (three microsecond add execution time, six microsecond memory cycle time), high speed input/output (reads 800 cards per minute, prints 700 lines per minute), 66 KC Magnetic Tape speeds, and solid state construction. This large-scale performance is available to you in the medium-price range. Result: maximum through-put per dollar for you.

For details in depth on the B 5000 concept, call our nearby office now. Or write Data Processing Division, Burroughs Corporation, Detroit 32, Michigan.

Burroughs–TM

Burroughs Corporation

"NEW DIMENSIONS / in electronics and data processing systems"

(Circle No. 17 on Reader Inquiry Card)

HOW TO FIND THE POINT OF NO RETURN IN A COMPUTER FEASIBILITY STUDY

By RAYMOND DREYFACK
Director of Tabulating Systems
Faberge Perfumes, New York

HOW MUCH attention should be paid, how much study given, to "dramatic" announcements of new computers on the market by companies already advanced in the study and consideration of existing equipment?

This problem is wrinkling the brows of more than one manager involved in the evaluation of electronic data processing systems. Take the hypothetical example of the ABC Manufacturing Company. ABC is currently running its billing, receivables, payables, inventory control, payroll, and other applications on conventional punched card equipment. Its volume of transactions and corresponding flow of paperwork is mushrooming so rapidly that this conventional system is straining at the seams. In addition, inventory problems are becoming increasingly complex with more information needed faster, more accurately, and more economically.

Consequently, ABC formed a committee to determine the advisability of using EDP. After a certain amount of pondering the planners decided that a computer in the medium-price range was just what the company needed. But which computer?

Many manufacturers surveyed

Phase two involved consultations with five or six computer manufacturers. General discussions were held, applications explained, overall requirements made clear. Rough proposals were submitted, and a preliminary survey was made to determine—from a standpoint of machine capacity and cost—which computers were in the running.

Eventually—already a few months had elapsed since the ball started rolling—the field was narrowed to three manufacturers. Further studies were undertaken at this point to determine the advisability of using either punched cards or paper tape as input to the system. ABC planners learned that the advantages and disadvantages of each depend on the intended use and the applications involved. Factors of cost, speed, and simplicity must be carefully analyzed. What is the handling involved, the storage requirements? What effects would tape, rather than cards, have on programming effectiveness?

Output is another vital consideration. Should the system print documents and reports "on-line," *i.e.* in conjunction with the computer processing, or off—to produce as a by-product tape or cards to be fed into other equipment? By using off-line equipment the computer is never "print-bound," or slowed to the speed of the printer. But how

"New, major breakthroughs" pose new, major problems

much peripheral equipment will be needed to process the by-product tapes or cards on an off-line basis? How would this affect the costs and operating efficiency in terms of equipment and personnel?

These questions can be answered only by exhaustive time and study on the part of the planning group. At this point in the hypothetical example, the ABC planners selected three medium-sized computer systems for more detailed investigation. Many hours were then spent independently and in consultation with the sales and systems representatives of these manufacturers. Seminars were attended by both management and staff personnel involved. ABC people already had been exposed to intensive orientation and programming courses offered by the computer companies.

As the detail investigation became more concentrated, a definable pattern began to emerge. Proposed applications were timed to computer processing speeds, and overall objectives were projected in a clearer fashion. During the course of this study, all three systems were found to be capable of doing the job outlined. One of them, however, would utilize almost 80 per cent of its available memory storage to house master records; the other two systems could store the data in less than 60 per cent of its space—and this does not mean that the computer with the largest advertised space can house the most records.

Since a 20 per cent cushion of memory storage is deemed insufficient for future expansion plans, one computer could be eliminated from further consideration, and the field of choice narrowed to two.

At this point, however, the representative of another computer manufacturer called to announce breathlessly that his company would soon unveil a "major breakthrough" in the "state of the art," a "new concept" in data processing "hardware," and all the other cliches developed by the computer industry. This news threw the ABC planners in a quandary. Assuming the soon-to-be-announced wonder computer was just that, where should they go from here?

On another long, expensive re-educating and re-orientating buggy ride? Undoubtedly, if all the claims and recommendations were to be conscientiously checked out. It would be off again to more seminars, more training, more book-cracking, more intensively involved programming courses to learn how breathtakingly simple it really is to program the machine.

What happens then to the well-intentioned schedule of action in the meantime? What happens to the paperwork problems that are continuing to mushroom? What happens to the volume processing that is straining the capacities of the present system? How long can the "on the air" date be delayed?

This is the most significant question of all. How long can a company wait? If it can wait indefinitely, maybe it does not really need a computer. But if the time element is urgent, as it generally is, can any company afford to let a really good possibility slip by without investigating it thoroughly?

Unfortunately, there is no pat answer, no unequivocal blanket statement that once a certain point has been reached in the feasibility study, all shutters should be pulled down, all minds unconditionally closed to further consideration of new equipment. On the other hand, a schedule of action should be adhered to as vigorously as possible.

This is a problem that occurs more often than one might imagine. More than one carefully timed apple cart has been up-ended in

(*To Page* 58)

the name "addo-x" [pronounced add—oh—ex]

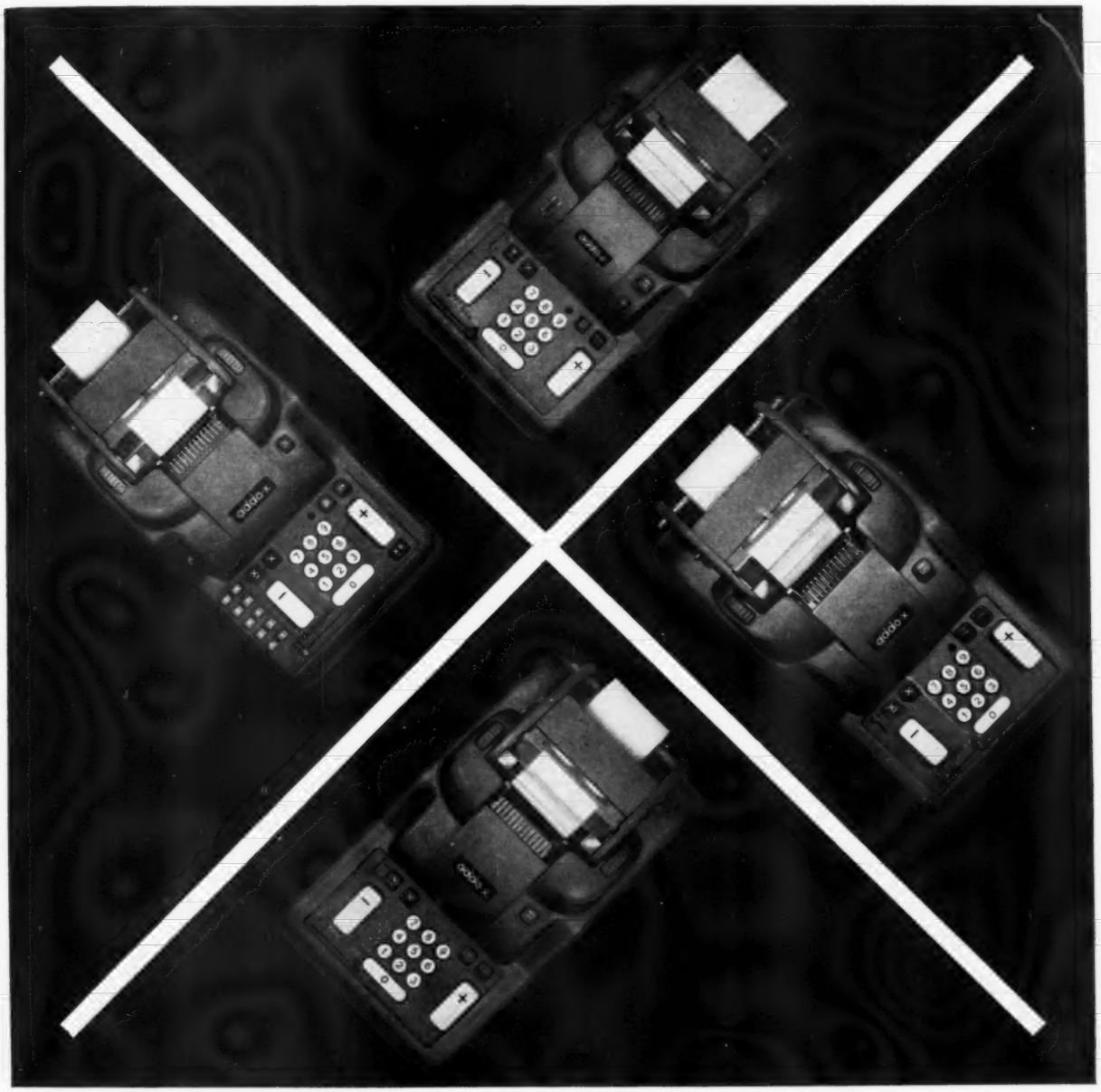
addo-x

■—The recent opening of new and larger California headquarters, in Los Angeles, together with the New York and Illinois branches, is a further step indicating the rapid growth of our coast to coast facilities for nationwide distribution of the "addo-x" [—pronounced: add-oh-ex] products, in response to the universal demand for well designed office equipment.—■—"addo-x" office machines, manufactured since 1918 by AB Addo, Sweden, now one of the largest ten key electric adding machine manufacturers anywhere, with representation in over one hundred countries, began distribution of "addo-x" products in New York in 1938 through the Addo Machine Company. The "addo-x" high quality standards in design, and in manufacturing, met with such favorable response as to require the formation of subsidiary sales and service companies, housed in their own modern buildings in New York, in Chicago and in Los Angeles. These are the three main points from which we keep more than a thousand authorized sales and service stations well supplied with equipment and original spare parts for "addo-x" adding machines, printing calculators, posting and special purpose machines.—■—To provide a complete line of office machines, the "addo-x" group also distributes the English made "Roneo" stencil duplicators and the West German made "Adler" Portable, the Standard and Electric typewriters. Both are products of quality in keeping with "addo-x" high standards.

"addo-x inc", 300 Park Avenue, New York 22, New York—phone: PLaza 5-5420
"addo-x" sales corporation, 6549 W. North Avenue, Oak Park, [Chicago], Illinois—phone Village 8-5382
Western Addo Inc, 3339 Temple Street, Los Angeles 26, California—phone: DUnkirk 5-4161

(Circle No. 3 on Reader Inquiry Card)

▬ *stands for precision-built adding machines*



from our production program:—Up to 11 column electric adding machines with direct subtraction and single-key repeat feature, single or grand total registers. Automatic multipliers with dual keyboard to short-cut multiplication and one or two accumulating registers.

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the name "addo-x" [pronounced add—oh—ex]

from our production program:—Shuttle carriage machines for 2 or 3 column listings, posting machines, bookkeeping machines, printing calculators. Solenoid [remote control] operated adding machines. Adding machines with electro-mechanical storage for electric digital read-out.

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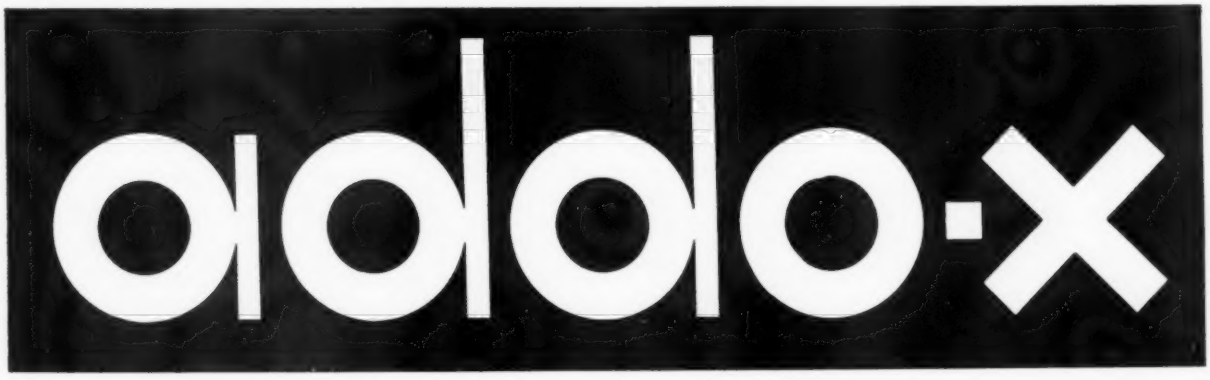
stands for precision-built adding machines

Honest quality, superb performance and truly useful and unique features have made "addo-x" products so popular. The fine reputation which our products have gained all over the country, is jealously guarded by our service representatives everywhere: they endeavor to keep every one of our machines at top performance for many years after the initial installation, insuring unparalleled customer satisfaction. Specially trained mechanics check each machine before delivery. Training courses in New York, in Chicago and in Los Angeles, for dealers' mechanics assure proper servicing with original parts of which we generally maintain a ten year supply! "addo-x" not only has the office machine you need, but it has just the plan to meet your individual requirements. Choose installment buying, limited or extended rental-purchase, or cash. We'll provide free trial to prove "addo-x" superiority, guarantee immediate availability of parts and service, and, should you expect your requirements to change, we will guarantee future trade-in values. Call your nearest "addo-x" dealer today. He will be glad to arrange an "on your job" demonstration at your convenience, without obligation, and show you that whether it is an "addo-x", an Adler or a Roneo, he has the machine that will increase your office efficiency and make your purchase of an "addo-x" office machine worthwhile. Descriptive literature furnished on request.



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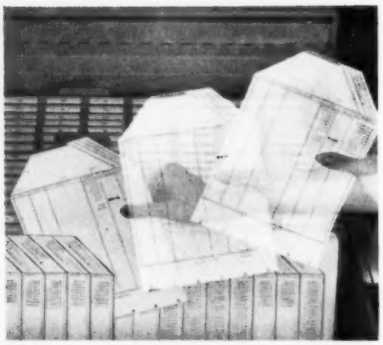
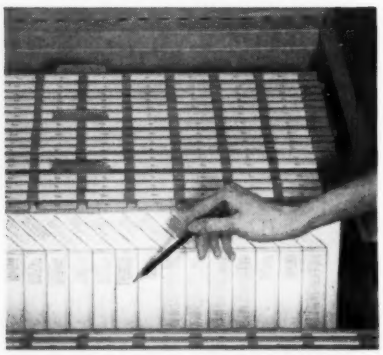


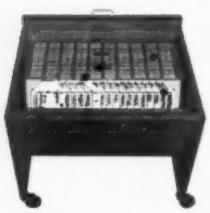
take it...or leave it



New quick-as-a-flash VERI-VISIBLE halves posting or checking time.

FIND AND TAKE OUT INSTANTLY. Veri-Visible keeps many thousands of records on view at operator's finger tips. She instantly finds and takes out any one of them for post haste posting by hand or machine.

LEAVE IN AND CHECK INSTANTLY. Without even removing card, operator can check indexing and balance on completely visible corner and side margins. Compact, Veri-Visible portable or floor units handle anything from coded punch tapes and cards to one-time statement and ledger sets. Send coupon.



Left-to-right indexing keeps thousands of cards at operator's finger tips.

Adjustable dividers let you fit system to records.

"Card Out" signals speed refiling.

Double-view margins keep customer's name and balance always on view.

ACME VISIBLE

ACME VISIBLE RECORDS, INC.
2103 West Allview Drive, Crozet, Va.
I'd like to know more about the way Veri-Visible systems can cut time and costs on my posting, checking and billing.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE ____ STATE ____

(Circle No. 2 on Reader Inquiry Card)

Feasibility study

(*From page 53*)

this way. More than one company has gone so far as to cancel an existing order or write off months of programming time already paid for in order to take a crack at a newer piece of equipment.

During the past ten years, growth in the data processing field has outstripped growth in the prior ten centuries. Each year newer and better computers are announced. Even if they are not always exactly what they are expected to be, it stands to reason that in an industry where technology is expanding at such a fantastic rate more is being learned each day, more features are being added, and more problems overcome.

Consider the advance in printing output alone during the past year or two. High-speed output of 600 lines and more a minute is no longer a promise, but a positive achievement. Input and output speeds of tape and cards grow faster each year. Internal processing speeds, now measured in billionths of a second, defy the imagination.

The point to be stressed is that a feasibility study could go on almost indefinitely with new advantages constantly being added. The question is: How much consideration from the points of urgency for action, and sheer cost of consideration itself, can a company afford? How many high priced systems and management persons can a company afford to tie up over long periods of time?

Regardless of anticipated benefits, a line has to be drawn somewhere. Moreover, if a new consideration is indulged in, the costs of all the prior considerations cannot be written off. The question must be soberly asked, and even more soberly answered: Is the potential benefit to be gained by abandoning old concepts in favor of new so dramatically large that it will compensate for the money already expended, and the cost of further delay?

Unless the answer is a resounding "Yes!" any company is probably better off sticking with practically developed concepts.

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Packed with information, this folder shows you:

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(Circle No. 12 on Reader Inquiry Card)

ERRATUM

Washington investment broker Hugh D. Auchincloss was incorrectly identified twice in the article "Fit the office to its occupant," in last month's "Office Design" section. His first name was given as Joseph in one case, and John in another. *Office Management and American Business* apologizes for this error.

Tips for the Office

Ten ways to save on electric bills

1. Turn the lights out—Consumption can be reduced 5 to 15 per cent by an educational program to turn off unnecessary lights. Most frequent violators, studies show, are persons in private offices.

2. Use fluorescent lighting—It is cheaper. A 40-watt fluorescent tube has 10 times the surface area of a 40-watt incandescent lamp.

3. Check those light bulbs—The rated life of an incandescent bulb is now rated at more than 1,000 hours. The life of fluorescent tubes will vary, but most of them outlast incandescent bulbs. It is wise to have all bulbs and tubes tested periodically and set up a schedule of change.

4. Use proper wattage and voltage—It is important that bulbs are of proper wattage for the system. An incandescent bulb burned at a higher-than-rated voltage will give off increased light, but the natural life of the bulb is reduced. If the bulb is burned at less than rated voltage, amount of light given is reduced out of proportion to savings.

5. Discourage auxiliary lighting—If the proper illumination is provided, as tested by light meters, auxiliary lighting is wasteful. It is possible to waste 10 to 15 per cent of the current in an effort to produce sufficient illumination by auxiliary lighting.

6. Keep fixtures and bulbs clean—Dirt and grime can cut down on the illumination by as much as 25 per cent. This is particularly true of indirect fixtures.

7. Use proper ceiling color for indirect lighting—Even though you may be getting the foot-candles of illumination you are paying for, the wrong ceiling color can absorb light so that the proper number of foot-candles are not available at the level of usage. Lighter shades of flat paint will give the proper reflection of light.

8. Light-colored walls and proper reflection—Dull wall surfaces aid in reflecting light without causing glare. Pastel shades are best.

9. Disconnect electrical equipment at night—There have been many instances of electric typewriters, dictating machines, and other electrical equipment being left on all night by busy office workers. Assign someone the task of checking electrical equipment after normal working hours to see that it is turned off.

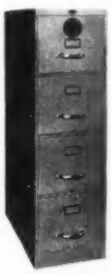
10. Use translucent glass in office partitions—A great disadvantage of solid wall partitions is that whatever natural light may be available from other offices is screened out and the full burden placed on artificial illumination. If translucent glass is used, privacy may be preserved, but natural light can filter through into areas beyond the partitions.—Edward Ryan, business editor, The Dartnell Corp., Chicago.

Four steps to better files

You can have a more useful drawer file by taking these four steps:

1. Take an inventory of your present file.

"fileage"



Lock Files, too!

FILEAGE in the office is like mileage on the road. The rugged, lifetime construction of Bentson files is your assurance of years of trouble free service. Their smooth operating features make them a dream to use—even to sit on, at times!

In addition, Bentson cabinets are offered in a wide range of decorator colors and in literally hundreds of drawer combinations. Your choice, too, of follower blocks, sway blocks, or hanging folder frames. Any way you look at it—as a buyer or a user—Bentson files are a quality investment.

To get more fileage-per-gal in your office, see your nearby Bentson dealer, or write for new catalogue.

THE BENTSON MANUFACTURING CO. BENTSON AURORA - ILLINOIS

BENTSON MFG. CO.
650 Highland Avenue, Aurora, Ill.

(Circle No. 13 on Reader Inquiry Card)

"Maggie" Magnetic Boards Keep You on Top of Every Operation

"Maggie" Magnetic Visual Controls offer the easiest and quickest way to chart sales, traffic, personnel or any other phase of your business. Colorful, magnetic indicators tell you at a glance if everything is in the right place at the right time. No cards, pegs or other nuisance devices to replace because "Maggie" Boards with magnetic indicators last indefinitely. Pays for itself many times over because the first cost is the last cost.

Priced from $49.50 complete.

Write for FREE catalogue on the most modern and flexible control system available today

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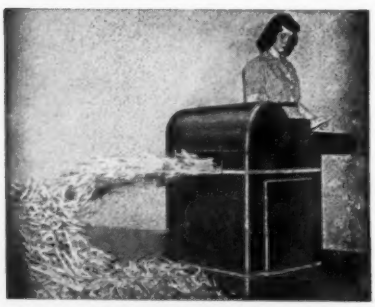
Quickly shreds newspapers, magazines, waste paper, tissue, cellophane, corrugated cartons, wax paper, etc., into uniform resilient strands ideal for packing purposes. Especially adapted to shredding confidential records, blueprints, etc., permitting the return of this high-grade paper to the paper mills, for re-use.

Compact, economical, safe. All revolving parts are covered. Instantly adjustable. Shreds ¼" to ¾". Designed for continuous and trouble-free service.



FREE TRIAL
Operate a SHRED ALL 30 days. If not satisfied—return—owe nothing.

UNIVERSAL SHREDDER COMPANY
Dept. M **SAGINAW, MICHIGAN**

(Circle No. 67 on Reader Inquiry Card)

Tips for the Office

2. Clear the files of unnecessary material.

3. Consolidate the remaining material.

4. Organize the material you keep.

Work only in this sequence. If you follow any other, you will be doing your work backwards and you will be working harder than you have to—Leslie Matthies, Ross-Martin Co., Tulsa, Okla.

Writing overseas letters

1. Make the letter friendly, but not gushy or too chummy.

2. Follow the common conventions; avoid tricky innovations or unusual openings and fancy flourishes.

3. Write in simple, easily understood English; avoid too many colloquialisms.

4. Check to see that the terms you use will not confuse recipients who may be familiar with British rather than American usage.

5. The letter may be translated. Be sure the English meanings are clear and lose nothing in translation.—Edward Ryan, business editor, The Dartnell Corp., Chicago.

More from temporary help

1. Give accurate description of job requirements to the agency.

2. Brief an assistant or the receptionist on what to do if you should not be available when the worker arrives.

3. Keep waiting time at a minimum by having the work area ready to get the employee started at once.

4. Have good equipment ready for the worker.

5. Be sure she has all keys to the desk and file cabinets that she needs.

6. Be sure the girl understands the instructions concerning the work she has to do. Check her performance at frequent intervals—especially in early stages.

7. If you will not be available to answer questions that may arise, appoint someone who will be. See that the new worker is introduced to this person.

8. Prepare a sample kit of letterhead paper and other company materials that she will need. Include a list of staff members' names and titles—spelled correctly.

9. Explain company policy about rest periods, smoking, personal calls, and lunch periods.

10. Don't expect the worker to shift for herself. Treat her as a regular employee, and see that others bring her into the group—Harold W. Dickhut, general manager, Stivers Office Services, Chicago.

Mr. Ira Wachtel, Office Mgr.
Ivel Construction Co., Brooklyn, N. Y.

"The Dixon people call it 'MARVELEAD.' All I know is: DIXON TICONDEROGA pencils sure write smoother."

The Joseph Dixon Crucible Company
JERSEY CITY 3, NEW JERSEY

TICONDEROGA, N. Y.-MEXICO CITY, D. F.
SANDUSKY, OHIO-NEW MARKET, CANADA

(Circle No. 22 on Reader Inquiry Card)

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Keep Expense Records the "Common Sense" Way

Weekly & Monthly Books, Weekly Sheets

Beach's Common Sense Expense Books

BEACH'S Lead in U.S. Sales

BEACH Books are Complete — Sturdy — Easy to Use for detailed on-the-spot entries that *verify allowances . . .* Preferred by VIP's, salesmen, and good tax accountants.

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(Circle No. 11 on Reader Inquiry Card)

Automation will create new world: Diebold

Management consultant John Diebold carried his one-man crusade to sound the alarm of the impending benefits and dangers of automation to the Society for the History of Technology. He spoke before the society's recent meeting, held in New York in conjunction with the annual gathering of the American Association for the Advancement of Science.

The automation revolution, "a revolution in which human beings will be largely freed from the bondage of machines," will bring about many of the following changes "within our own lifetime," according to Mr. Diebold:

1) A world in which fewer people work in factories.

2) A world in which less human effort will be required for monotonous and tedious work.

3) A world in which the work week is greatly shortened.

4) A world in which the pace of life slows down—in which leisure becomes the center of life, rather than the fringe.

To make these promises come true, he warned, industrial leaders must now change their concept of the business enterprise from departmentalization to integration.

Legacy of departmentalization

"Today's business organization structure is a legacy of the first industrial revolution in which specialization of labor was followed by mechanization around specialties. We are now in possession of technology which allows us to build information systems which transcend the compartmentalized structure of business organization," Mr. Diebold reported.

"As production is increasingly controlled by a business-wide information system, through computer scheduling and actual factory control, the traditional office-plant distinction requires overhaul. The role of middle management will change as the function of allocation of resources is performed by computers. Some predict the disappearance of middle management as a line function, and the growth of a new staffing function: the analysis and continuing reappraisal of the computer models and of the assumptions on which they are based in order to keep the system sensitive and itself receptive to change," Mr. Diebold said.

Avoid confusion of scraps of paper . . . lost opportunities . . . forgotten duties and appointments. Use the MEMOGENDA. Permits constant survey of work ahead . . . results in working without strain. Checks out completed tasks and builds valuable history of activity. Users say they gain more time for living by making the best use of their working hours.

MEMOGENDA is a 96-page book, wire bound in a flexible leather-like covering. The right hand pages (8½ x 11) have numbered lines, one for each item. Opposite pages are for additional memos . . . includes instructions for use, an annual reminder, 3-year calendar, and active telephone list.

Price $30 a dozen F.O.B. factory, or send $3 for sample, postpaid. Full refund if it isn't the best investment you ever made.

KANO LABORATORIES
1024 Thompson Lane, Nashville 11, Tenn.
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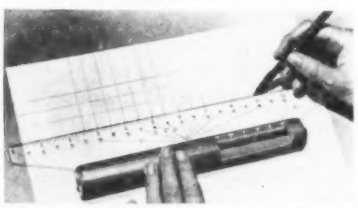
FIRST ADVANCE IN RULERS



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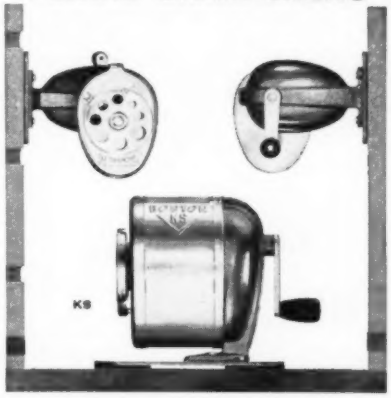

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OFFICE DESIGN

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FLOOR CONSTRUCTION: PLAN FOR ELECTRONICS

Telephone and electrical outlets should be included in construction plans to give a maximum amount of flexibility and an accurate flow of work. A general office area in the headquarters of Atlas Van-Lines (above) is shown before and after occupancy.

By JACK FREIDIN
Freidin-Studley Assocs., New York

TWENTY YEARS AGO the only requirements for an office floor were that it be relatively level, not unattractive, and that it be strong enough to carry the weight of desks and filing equipment. Today, floors must meet the more stringent requirements of automated, and increasingly complex, office installations. When evaluating, planning, and designing space for an office, a company must consider the floor from a variety of critical positions. The average businessman contemplating a move to new offices ordinarily gives no more consideration to floor construction than did his predecessor, and he is frequently faced with costly floor alterations after the lease has been signed.

Offices that now have data processing equipment, or those that are thinking of automating a portion of their procedure, must pay particular attention to the construction of a floor when inspecting office space. Electric typewriters, calculating machines, and telephones make it unwise for the modern office to ignore basic characteristics of the floor even though automation may not be a future consideration. For those offices that utilize large undivided work areas, the provision of sufficient electrical and telephone outlets is especially important.

There are a number of ways to incorporate outlets in the floor. Some of them are more desirable than others. Several new office build-

Data processing equipment at Government Employees Insurance Co., is ventilated through a raised floor by special equipment that conditions 31,000 cubic feet of air per minute. The raised floor reduces vibrations and gives access to a network of power cables.

ings, the Time-Life building in particular, are equipped with underfloor ducts containing telephone and electrical conduits that permit the flexible installation of floor outlets.

In other new buildings and in older ones where hung ceilings are used, conduits may be placed between the floor and the hung ceiling of the office below. This may be done through the ceiling of the office below. Holes may be drilled in the floor where outlets are desired if the lower office is not in use or if the tenant does not object. Frequently, however, it is necessary to chisel a channel in the floor, which can be costly and time consuming.

Of course it is possible, with proper planning, to run conduits in the wall and run wires, covered by moulding, across the floor to provide the necessary outlets. Although this method is least expensive to install once the floor is in place, it permits little flexibility of furniture layout once the moulding is down, and it may create a safety hazard in that someone may trip over the raised moulding where it is not covered by furniture.

Most floors in relatively new buildings carry a load capacity of 50 to 100 pounds per square foot—more than sufficient for the average office. When a firm requires heavy equipment, such as electronic data processing machines, it may be necessary to either reinforce the existing floor or to distribute the load over a wider area.

The units composing data processing systems often create a concentrated load on the floor as great as 1,000 pounds. Even when the weight of the machine can be distributed by placing it on planks or a platform, load capacities required are as high as 150 pounds per square foot or more. In time, as data processing systems become more common, new buildings may be designed for high load capacity. But this is too expensive to be practical in most buildings under construction today. The problem of load distribution is usually solved by installing raised or "floating" floors over the building floor slab. Raised floors can increase effective live load capacity while adding only a few pounds in overall dead weight.

Besides distributing weight over a wider area, installation of a raised floor has other major advantages. Interconnecting power cables and receptacles may be concealed and yet remain easily accessible; the space between the floors may house air conditioning ducts or plenums; flexibility of layout is assured.

Extreme flexibility and accessibility are prime requisites of supply circuits to computers. While not all machines in a computer room require a power supply circuit, those that do not are directly connected to machines that take power. Because the locations of machines and different power loads are frequently changed, connections must be easily reached. Cord connections to wall

outlets and even plug-in busway systems—very expensive under these circumstances—would not provide adequate flexibility and would be unsightly. Thus, locating cables between the two floors, with the panels of the secondary floor easily removable, is both attractive and flexible.

Electronic data processing equipment requires close control of air temperature, humidity, and dust. For this reason, EDP rooms must be air conditioned 24 hours every day. Besides the risk of a failure of the building's air conditioning system rendering the machines inoperative, the extra cost for overtime air conditioning, frequently as high as $15 to $25 an hour, increases the practicality of a separate air conditioning system for the computer rooms. Use of the entire raised floor as a pressurized plenum, with air entering the computer rooms through baseboard diffusers and leaving through ceiling registers into the hung ceiling, eliminates the expense of supply and return ductwork.

By keeping cables readily accessible for emergency repair and by helping to maintain optimum climatic conditions, the raised floor helps to keep machines operating full time. Because computer rental is very high, lengthy breakdowns are extremely expensive, and the company must be sure that any breakdown can be corrected as quickly as possible. This saving alone will pay for the floor installation within a short time.

Cost of raised floors

Average cost for a raised floor installation is about $5 a square foot. Raised floors that are not installed on stringers, metal beams, or grillwork permanently attached to the primary floor, may be moved along with the rest of the equipment should the company change location and, in some cases, may be rented from the manufacturer.

Companies evaluating space to be used for a data processing center should consider both the overall floor-to-ceiling height and the load capacity of the existing floor. Since a secondary floor adds little dead weight to the floor slabs, most new buildings can more than accommodate this extra weight. Floors in some older buildings, however, may have to be reinforced before the raised floor is installed. The question of floor-to-ceiling height is exactly reversed. Most older buildings were constructed with high ceilings, while in new buildings the ceiling height is usually eight to nine feet. Reduction of this height by the seven to twelve or more inches required for a raised floor, especially over a large area, can create an undesirable working area. Ceiling heights must be great enough to allow machine installations, eliminate claustrophobic feelings of personnel operating the machines, and permit maximum noise absorption.

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OFFICE DESIGN

FLOOR COVERING: PLAN FOR MAINTENANCE

By JOHN M. SINE

FROM a sawdust heritage, floor covering has become one of the most fussed-over components of the modern office. It has had the singular distinction of occupying the Senate floor as a subject of heated debate; its modern roles are varied: hard, consuming, velvet, yielding, tough.

The floor often becomes a system in which decorative qualities, durability, ease of maintenance, and degree of sound absorption, are proportioned and balanced with walls and ceiling to produce a functional unit.

"The floor can be used to visually expand and contract an area," according to Gerald Luss, vice president, Designs for Business, Inc., "or it can become a space divider through the use of color and materials. The floor can be used to establish prestige or echelon, and it can also express the particular nature of a given work space. In the reception room we often make the floor perform double-duty by creating one effect around the reception desk and another effect in the visitor's waiting area.

"In these examples and in other instances, the key requisite is to determine the requirements of an individual space. One must know beforehand whether a particular area will be equipped with flexible walls and how the flooring will be affected if layout changes are made."

Maintenance routines for resilient flooring depends upon the physical shape of the office, traffic, and, of course, the requirements of individual flooring products.

A general description of each resilient floor product and precautions to be taken in maintenance, follows below. A pattern of maintenance, however, will produce good results from most tile products.

Water-emulsion waxes are safe for all types of resilient floors while solvent waxes can damage asphalt and rubber tile; in some cases they will injure plastic floor covering. Scuff marks can be removed with a fine grade of steel wool dipped in a neutral cleaner (floor manufacturers consider a cleaner neutral if the pH, or acidity, does not exceed 10. Distilled water with a pH of 7.0 represents exact neutrality.) For special spot cleaning problems the manufacturer can prescribe treatment.

Asphalt tile is considered the most inexpensive tile for use in office

Lounge at Berkshire Life Insurance Co. is visually divided by floor covering (Designs for Business Inc.).

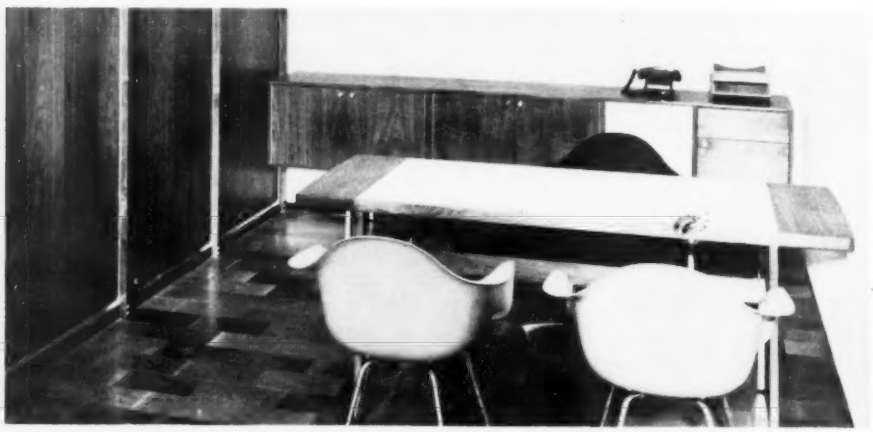
installations and is one of the most popular floor coverings in the resilient tile family. It generally carries a static load limit of 25 to 30 pounds per square inch (PSI) before indentation occurs and must, therefore, be protected from permanent indentation through the use of proper furniture cups, casters, or guides. Waxes or cleaners containing gasoline, naptha, turpentine, or mineral solvents, should not be used in maintaining asphalt tile because they make the colors bleed. A mild soap or cleaner recommended by the manufacturer (generally of the water-emulsion type), and a water-emulsion wax are satisfactory cleaning agents. Grease and oil spillage should be wiped up immediately to prevent permanent staining. Solid color tiles can vary slightly in shade —a possibility that should be considered where one color will dominate the overall floor pattern. Asphalt is the least resilient and acoustically efficient of the resilient floor coverings. Its durability and resistance to alkali is better than other softer materials. Asphalt tiles in three-sixteenths and one-eighth-inch gauges are designed for heavy traffic conditions.

Linoleum is available in roll form as well as in tiles. Alkali in any form is harmful to linoleum. Heavy applications of water or cleaner are not recommended; all excess fluid should be mopped up immediately. A neutral cleaner or a neutral synthetic detergent should be used. Do not use abrasive products except on isolated stains. Linoleum should not be confused with cheaper materials that are sometimes called "linoleum," such as printed enamel, but which have few of the qualifying characteristics needed for office installation. A .090 gauge linoleum can be used in areas of light traffic, but .125-inch gauge should be used in floors subjected to heavy traffic.

Vinyl asbestos tile has the advantage of being a medium-priced floor covering with some of the inherent advantages derived from its plastic mixture. It is considered less resilient than other vinyl tiles and can be indented at a static load limit of 25 to 30 pounds per square inch (PSI). Brighter colors are available than those generally found in asphalt tiles and resistance to oils, coffee, ink, and solvents is good. Under no circumstances should alkalis be used in the cleaning process, nor should solvent cleaners and waxes be used. For areas of heavy traffic a three-sixteenths or one-eighth-inch gauge should be used.

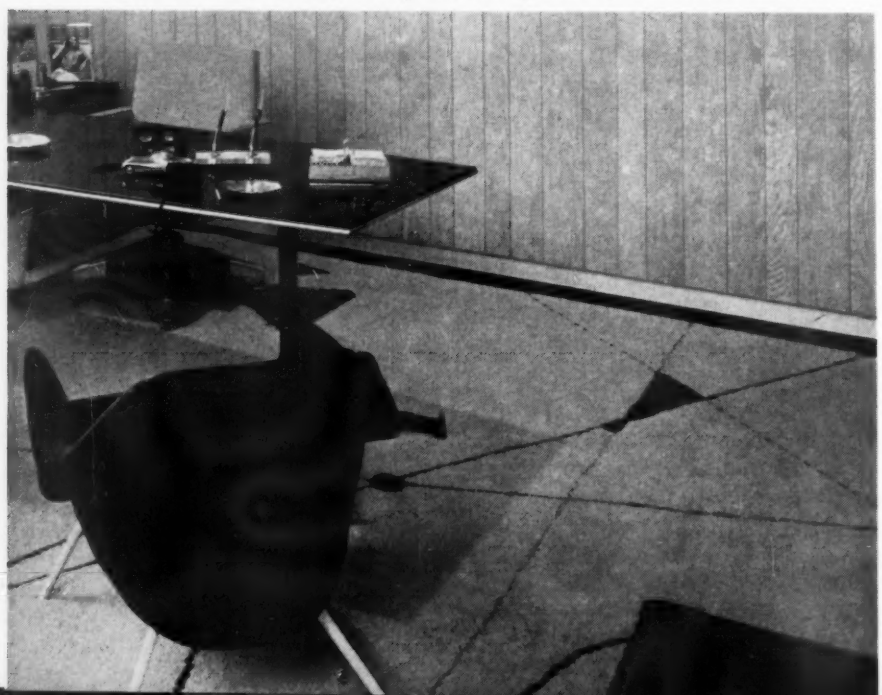
Rubber tile is one of the most resilient and acoustically efficient hard floor coverings available. It will carry a static load limit of 200 pounds per square inch before being permanently indented and is highly durable. Although less susceptible to indentation, it is still advisable to follow the recommended use of casters and furniture guides. Cleaning compounds containing gasoline, kerosene, and naptha, should not be used on rubber floors, nor should compounds containing oil be used in cleaning. Neutral cleaning agents, such as a good quality synthetic detergent, should be used. Solvents such as those found in paste wax cause rubber tile to soften and bleed. The proper tile gauge for areas of severe traffic should be three-sixteenths or one-eighth-inch.

Cork tile, a versatile, decorative floor covering, is not as resistant to wear as extremely hard surface products. It is used by designers for wall and floor covering and is acoustically efficient in either place. Cork tile should not be cleaned with naptha, benzine solvents, alkali cleaners or oil preparations. Tile may have a factory finish requiring only further maintenance



Cork tile adds texture to executive assistant's office, Olin Mathieson Chemical Corp.

Carpet in the private office of Raymond Loewy is a dominant source of decoration.



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with a water-emulsion wax or it may first need treatment with a sealer or solvent wax recommended by the manufacturer. Stains can usually be removed by using No. 0 steel wool dipped in a chemically neutral cleaner or solvent wax. Tile surface should always be re-sealed with wax after a stain is removed. Cork will support a static load of 75 pounds per square inch before indentation.

Vinyl tile is considered the longest wearing and most stain-resistant of resilient floor coverings. It can vary greatly in quality and characteristics depending upon the proportion of coloring materials and filler to vinyl resins. Solid, or homogeneous, vinyl tile (having the same color and composition throughout) is made of polymerized vinyl chloride resins combined with coloring material, mineral fillers, plasticizers, and is finished under heat and pressure. Ordinarily the translucency of the tile increases with the higher percentage of vinyl resin used in manufacture. Vinyl can be mixed with rubber to obtain advantages inherent in both materials, or it can be rotogravure printed (vinyl coated gravure). Resiliency, acoustical efficiency, durability, and resistance to oils, grease, and solvents are excellent. It is easily maintained with solvent or water-base waxes and cleaners. Strong alkali solutions can seep between the tiles and damage the adhesive. The PSI of solid vinyl tile is 200. Solid vinyl tile of one-eighth-inch gauge is designed for areas receiving heavy traffic.

Side-step cleaning costs

Office maintenance costs are high and will continue to increase unless steps are taken to reduce the amount of maintenance needed or the amount of time required to do the job. There are ways in which the cost of cleaning can be lowered in existing buildings, but according to Mohe H. Solworth and William B. Moore of Industrial Sanitation Counselors, buildings now in the planning stage can be better equipped to save future cleaning expenditures. According to the maintenance experts, a building should be "sanitation-designed;" it must be conceived with the object of "reducing the workload through reduction of soil load." The soil load is reduced when corners are rounded, sills sloped, doors hung flush, and fixtures recessed. Since the floor requires most of the cleaning time, it should be clear of horizontal objects. As many fixtures as possible should be hung vertically—from the wall or ceiling—to reduce

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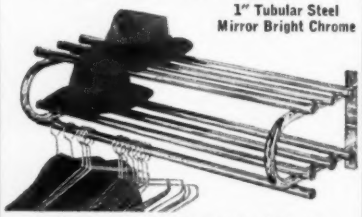

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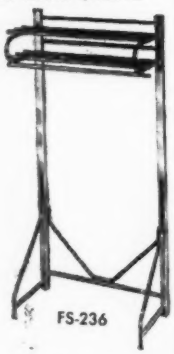

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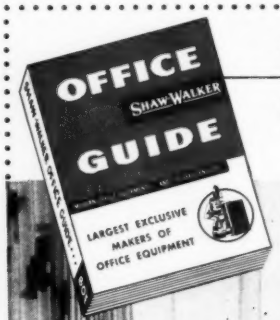

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maintenance time. This approach obviously requires the active participation of the architect. But it can produce results for offices already in existence. Are unused pieces of furniture stuck in corners around your office? Do you have ineffectual partitions that do not afford privacy and yet obstruct floor maintenance? If so, you are paying needless "obstruction" fees.

The Industrial Sanitation Counselors, in conjunction with the American Carpet Institute, Inc., has conducted studies to compare the cost of maintaining carpets against the cost of maintaining resilient floors. Similar wings of an upstate New York high school, one carpeted, the other having resilient floor covering, were used as test areas. The results were not conclusive due to lack of laboratory test conditions, but they do suggest that carpet should be seriously considered as a floor covering in areas of constant use because of its ease and relatively low cost of maintenance. "Results of the one-year study indicated that the carpeted areas tested could be cleaned in 52.7 per cent of the time and at 50.4 per cent of the cost of cleaning the resilient areas," the ISC test group reported. The wear of carpeting could not be evaluated during the short test period although it was rated at a quality level of 92 (100 is new condition). Resilient flooring was given a rating of 65 at the end of the year. The hard surface floor was given daily dust mopping, monthly buffing, and was stripped twice a year. The carpeted area was spot vacuumed daily and thoroughly vacuumed weekly; it was estimated that complete cleaning and shampooing would be needed every two years.

Qualities defy comparison

Complete comparisons of the two products can hardly be made because of the difference between the inherent characteristics of each product. The *total* benefits derived from a floor covering will depend upon the demands of the area to be covered, subtracted by price, divided in opinion and personal preference, and multiplied by the satisfaction of having your choice installed.

Testimony for the increased popularity of carpeting as an office floor covering is the 52-story Union Carbide Building in New York. More than 15 acres of Dynel modacrylic fiber carpeting were installed in open office areas and corridors, as well as in executive offices.

The acoustical properties of carpet were established by Professor Cyril M. Harris at the acoustics laboratory of Columbia University, and include tests made by the National Bureau of Standards, Washington, D. C. (*Journal of the*

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OFFICE DESIGN

Acoustical Society of America, November, 1955). It was proven at that time that carpet was an efficient acoustical material capable of significant airborne sound absorption and that it substantially eliminated impact noise.

The attack on stains

Carpet stains can be lessened or completely eliminated if *prompt action* is taken when the stain occurs. Prompt action, however, implies that the proper remedy will be applied; fast application of a harmful remedy will merely result in rapid carpet deterioration. The National Institute of Rug Cleaning, Inc., recommends the following rules for spot treatment of rugs and carpets:

1. Blot up or absorb liquid or other spills as soon as possible, using clean white unstarched cloths or paper towels. The longer the spill remains, the harder it is to remove.
2. Don't brush or rub the spot any more than can be helped. Excessive action may result in a distortion worse than the spot. Begin at the outer edge and work toward the center of the stained area.
3. Before using a formula, test it on the carpet and note its effect on the dyes. If the color comes away call a professional.
4. Have patience. Some spots require much time and work to remove and some may never yield.
5. Never permit a wetted area to dry slowly to air. Blot as much as possible and then leave a pad of weighted cloth or paper towels on it to absorb the remaining moisture.

Mysterious stains often result from artless use of ordinary water. When water is allowed to soak, either by accident or in the cleaning process, it dissolves impurities contained in the backing material. Tufts of the rug pile become wicks, bringing the drying water and its staining impurities to the top of the pile. When the water evaporates, the impurities form a brown discoloration that is often not seen until the carpet is cleaned.

Following are emergency treatments and formulae—

INDENTATION

Resilient floors must be protected against permanent indentation caused by heavy loads on small or sharp bearing surfaces. Remove any small metal domes from the furniture legs and follow instructions below:

HEAVY FURNITURE, more or less permanently located, should have composition furniture cups under the legs to prevent them from cutting the floor.

FREQUENTLY MOVED FURNITURE requires casters. Desk chairs are a good example. Casters should be 2" in diameter with soft rubber treads at least ¾" wide and with easy swiveling ball bearing action. For heavier items that must be moved frequently, consult the caster manufacturers as to the suitable size of equipment that should be used.

LIGHT FURNITURE should be equipped with glides having a smooth, flat base with rounded edges and a flexible pin to maintain flat contact with the floor. They should be from 1¼" to 1½" dia., depending upon weight of load they must carry. For furniture with slanted legs apply glides parallel to floor rather than to slanted ends of legs.

Weight (per leg) of Fully Loaded Furniture	RECOMMENDED FURNITURE REST SIZES			
	Linoleum and Plastic Flooring	Vinyl-Asbestos Asphalt	Rubber	Cork
Up to 50 lbs. Per Leg	1-3/16" Dia	1-5/8" Dia.	1-3/16" Dia.	1-5/8" Dia.
50-100 lbs. Per Leg	1-5/8" Dia.	2-17/32" Dia.	1-3/16" Dia.	2-7/64" Dia.
100-150 lbs. Per Leg	1-5/8" Dia.	1-3/4" Dia.	1-3/16" Dia.	2-17/32" Dia.
150-200 lbs. Per Leg	2-7/64" Dia.	2" Dia.	1-3/16" Dia.	2-17/32" Dia.
200-250 lbs. Per Leg	2-7/64" Dia.	2" Dia.	1-5/8" Dia.	2-17/32" Dia.
250-300 lbs. Per Leg	2-17/32" Dia.	2" Dia.	1-5/8" Dia.	2-17/32" Dia.

Reprinted from BUILDINGS, November 1960.

Formula for treating carpet stains

Three substances found in any kitchen provide mild but effective remedies for most stains.

FORMULA 1: One teaspoon of one of the neutral (non-alkaline) detergents such as those used for washing delicate fabrics, mixed with one-half pint of lukewarm water.

FORMULA 2: One-half cup of white vinegar mixed with one and one-half cups of lukewarm water. Saturate a sponge of cloth with this solution and squeeze gently on the spot. Allow it to remain on the stain for two or three minutes and then blot with a damp cloth. Squeeze lukewarm water on the area and blot again several times. Finish by blotting up remaining moisture with a pad of dry cloth or paper towels weighted in place.

FORMULA 3: (To be used with caution and only when specially directed.) One tablespoon of household ammonia mixed with three-fourths of a cup of water. Apply to stain, work in with a spatula, then rinse by aplying a little clear water, and absorb. Dry completely by blotting with a pad of dry cloth or paper towels held in place by a weight.

NOTE: In addition, a dry cleaning fluid (dry solvent) will be effective in many cases. It should be used sparingly to avoid damage to the latex backing with which many rugs are manufactured.

BEVERAGES—*Alcohol, Coffee, Tea, Soft Drinks.* Saturate the area with a little Formula 1. Follow with plain lukewarm water. Absorb the moisture into a sponge and saturate again. Repeat several times. Apply a little Formula 2 and blot up the excess. Dry thoroughly as directed. Most beverages contain a sugar which is colorless when first deposited on a fabric. After being exposed to the air for some time, a chemical change called caramelization occurs and sets permanently, causing tan or brown discoloration.

CHEWING GUM. This usually responds to dry solvent. Apply lightly to scrape up as much gum as possible. Remove remainder by sponging with dry solvent and absorbing with a dry towel.

GREASE. Apply dry solvent by sponging. Absorb by rubbing with a dry towel; repeat if necessary.

INKS. Don't let ink spills penetrate and dry. Blot up at once with paper towels or bathroom tissues. Apply dry solvent and absorb at once. Work a small area at a time and continue until the whole spot area has been treated. When dry solvent will no longer remove color, switch to Formula 1. Apply a few drops to a limited area and blot up immediately. Continue as long as you get results. Some inks respond to Formula 3. Try it on a small area first. Often the last of the color will respond only to professional treatment. The professional should be told all the steps taken before he begins. DON'T use milk or corn starch!

NAIL POLISH. Do not use nail polish remover! Amyl acetate purchased at the drug store often does the job. Apply to a small area first.

PAINT. If hardened, consult a professional carpet cleaner. Remove fresh paint as soon as possible with a blunt knife. Apply dry solvent and blot up with tissues.

WAX. Most waxes will yield to dry cleaning fluid.

UNKNOWN ORIGIN. If you don't know what caused the stain, better not experiment. You might make it permanent.

The staff of *Office Management and American Business* wishes to acknowledge the cooperation of the following companies that provided information and photographs: Aluminum Company of America; American Carpet Institute, Inc.; American Society for Testing Materials; Armstrong Cork Co.; Asphalt and Vinyl Asbestos Tile Institute; Designs for Business, Inc.; Floating Floors, Inc.; The B. F. Goodrich Co.; Industrial Sanitation Counselors; Rubber and Vinyl Flooring Council, The Rubber Manufacturers Association, Inc.; Uvalde Rock Asphalt Co.; *Buildings* magazine.

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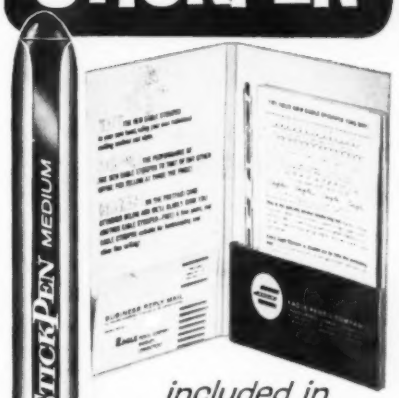

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TOOLS OF THE OFFICE

COPYING PROCESSES AND EQUIPMENT

By MARY D. LYONS

AT THE turn of the century horses and buggies were still the rage, and White House walls resounded with the high-pitched eloquence of Teddy Roosevelt. It was also a time when knowledgeable businessmen resorted to the aid of copying machines similar to the one pictured below.

Today we have automobiles—and John F. Kennedy. We also have a wide range of much improved copying machines, which are discussed in this section. (It should be noted that this month's feature deals exclusively with *copying;* next month's article in the "Tools of the Office" series will cover *duplicating.*

New developments

Apeco (American Photocopy Equipment Co.) recently announced the advent of its 'Electro-Stat,' a compact desk-top copier using an electrophotographic technique. The unit, which required more than four years of research and developmental work, produces copies of any business paper, even those using half-tones, solids, and colored material. The Electro-Stat will produce five copies a minute without the use of liquids.

Minnesota Mining and Manufacturing Co. recently announced the development of new copy papers that will make black-on-white permanent reproductions in any 'Thermo-Fax' copying machine at a cost of less than two cents a copy. According to the company, the new process consists of two "unique" papers that team together to virtually eliminate the need for carbon copying of letters, order forms, inter-office memos, reports, and similar internally originated documents.

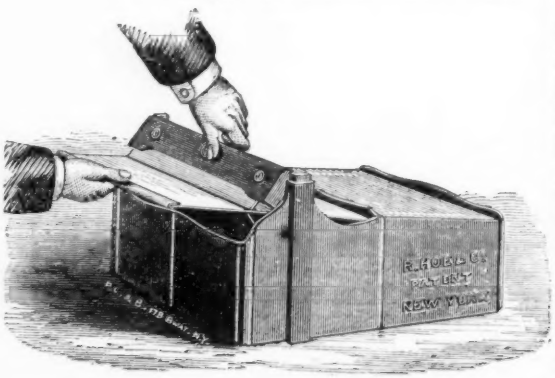
The new papers are 'Thermo-Fax' Type 'A' pink systems paper and Type 'B' white systems paper. They were designed to fill a need in all offices where error-free multiple copies of documents, letters, and other information are needed quickly and economically. The announcement said the new method requires no inks, stencils, special equipment, or trained operators. The Type 'A' paper serves as the original, or master, and is used just as any ordinary office paper or form for typing, printing, or writing. It erases easily and is perfectly dry and clean, the company said, and a single Type 'A' original may be used to make 25 or more black-on-white copies on the 'Thermo-Fax' Type 'B' systems paper.

According to the firm, the Type 'B' white paper is a high quality, stationery-weight copy paper. The copied image on the new paper is permanent and it may be used in the same way as an original document to make copies.

The company claims that the new systems paper "team" offers complete flexibility in cutting the cost of office form distribution. The pink Type 'A' sheets can be preprinted with a company letterhead or for such items as bulletins, reports, requisitions, invoices, purchase and production orders, analysis sheets, and others. These master

PATENT DAMPENING TABLETS,

For Copying Letters and Legal Documents.



This indispensable addition to the ordinary Copying Press comprises a substantial iron case or water box, with a pair of rubber wipers, so arranged that the simple act of taking a Tablet out of the water, and passing it between the wipers, removes the surplus water from both sides, and prepares the Tablet for immediate use.

At one pressure of the press any number of manuscripts may be copied, including many duplicates of each page when desired: an invaluable aid to the merchant and the legal profession, where many letters and documents are to be copied in duplicates, with exactness and great dispatch.

The subscribers manufacture and keep for sale, at wholesale and retail, a large assortment of **LETTER-COPYING PRESSES,** combining tasteful designs with the best workmanship.

R. HOE & CO.,

29 & 31 Gold St., New York.

Development of the copying processes has come a long way since this turn-of-the-century ad was published. (Contemporary woodcut from the Bettman Archive, N.Y.)

sheets also can be typed on or written on repeatedly so that additional information can be added to an existing form.

The Type 'B' paper is then inserted along with the Type 'A' master into any 'Thermo-Fax' copying machine to issue bulletins, prepare information copies of letters, distribute the data entered on printed forms and, in fact, the company said, provide permanent, multiple copies of any typed, printed or written information with each copy made in a four-second, one-step process. Cost of the Type 'A' master ranges down to 2.33 cents per sheet, the announcement added, with the Type 'B' costing as little as 1.84 cents per sheet. Considering that a single sheet of the Type 'A' paper may be used to make 25 or more copies on the Type 'B', the average cost of these high quality reproductions comes to less than 2 cents per copy when the papers are purchased in quantity lots.

Peerless Photo Products Company's latest entry is the 'Quick Silver' machine, called the Model 314. It is said to copy all types of documents, up to 14 inches wide by any length, using a single sheet of paper. It uses two solutions, an activator and a stabilizer, which are supplied pre-mixed and fed automatically from the bottle into the processing compartments; list price is $645.

The machine employs a photographic stabilization process and has been on the market for about two years. Its main features are unusual copying versatility and economy. In addition to being able to reproduce all types of documents, it can also provide clear copies from both halftone and continuous tone film negatives. It can make positive copies direct from blue prints and "stat" type copies; it can produce paper negatives for burning in photo offset plates; and it can make an unlimited number of copies from one negative or matrix. There is no "peel-apart" or throw-away sheet as the machine uses a single sheet. Copies of 8½ by 11 documents can be made for five cents each.

A new device for X-ray reproduction is offered by Copymate Co. The machine is said to provide a new means for pictorial communication in reports and informal exchange of information. Utilizing heat in a dry process, the compact machine turns out a reproduction in about one minute. The result is a permanent image which is not affected by humidity or heat in storage. Known as 'Copymate,' the unit is desk-top size and has been designed to turn out high quality paper or transparency reproductions of X-ray film. It will handle sheets up to 14 inches in width of any desired length.

Paper reproductions have the appearance of an original radiograph as seen on the illuminator, while transparencies may be viewed directly or projected for group viewing. Contrast is controlled by exposure variation to enhance important details and reduction of contrast for non-essential information. The machine is self-contained; it requires no chemicals or liquids, and operation is automatic by push-button.

A. B. Dick's Model 114 Photocopier is a large document copier for copying accounting work sheets, engineering and artist's drawings, and any large document up to 15 inches wide. Like other A. B. Dick photocopiers, the Model 114 produces sharp black on white, permanent copies of anything written, drawn, typed, or duplicated in any color.

Ampto, Inc., a wholly owned subsidiary of Anken Chemical & Film Corp. has introduced a 12-inch diffusion transfer photocopier. The machine, called the Ampto 12 Photocopier, is said to make copies to 12 inches wide by any length. Specialized uses include preparation of positives for offset platemaking, intermediates for whiteprint and blueprint equipment, visual projection transparencies, and transferring to diffusion transfer offset plates.

The M. P. Goodkin Co. has announced the addition of a Horizontal 18-inch camera to its line of graphic and commercial arts equipment. The new Goodkin horizontal 18 will expose in or out of a darkroom line and halftone negatives, Gevacopy rapid negatives, and Ektalith transfer paper in sizes up to 14 by 18 inches, through an enlargement-reduction range of from 3X to 1/3X. The camera is no longer than the length of an office desk, and can be operated without wasted steps.

Copease Corp. has announced a new photocopier designed for copying oversize originals up to 18 inches wide by any length. Called the Champion 18, it copies large drawings, blueprints, plans, charts, ledger sheets, and 16-column paper.

By contrast, one of the latest methods of copying business documents is the Verifax process, used in this copier from the Minnesota Mining & Manufacturing Company.

The extra width of the machine also enables two operators to use the machine simultaneously when making 8½ by 11 copies, thus doubling production and eliminating wasted time waiting for the machine. The company also makes the Copease Crusader, said to be the only one-step automated photocopier on the market.

Copease photocopy paper is available in different forms: Permanent and of bond quality, it is available in white and seven other colors, air mail, card stock, double-sided stock.

Royal McBee Corp. has the Royfax office copier. According to W. L. Cornwell, coordinator of Royfax Products, more important than the speed of the machine is its versatility. "It is no longer considered the major function of our office copier to merely copy letters and other documents, although this it can do exceedingly well . . . The machine may also be used for making paper transparencies from engineering work sheets or diazo copy to produce masters which can be run through blueprint machines and therefore produce many of the working copies economically. The machine may also be used to produce transparent film which can be used in projection devices for visual aid to education."

Photorapid Corp. has announced the Electramatic Photocopy Machine. Robert Shotwell, marketing vice president of the firm says, "The Photorapid Electramatic should be heralded as containing the dryest liquid since the dry martini." The attributes of the product stem from the use of a new chemical cartridge that loads like a gun. The chemicals in the sealed cartridge flow into the chamber when the machine is put into operation. As soon as the photocopying job is complete, someone shuts off the machine and the chemicals return automatically to the cartridge, which then seals itself.

Old Town Corp. has recently announced a new copy paper made for use with Thermo-Fax machines. Called Copymaker, the paper is said to give clear, heavyweight copies in a black or brown image. Sheets are non-transparent and endure prolonged exposure to heat.

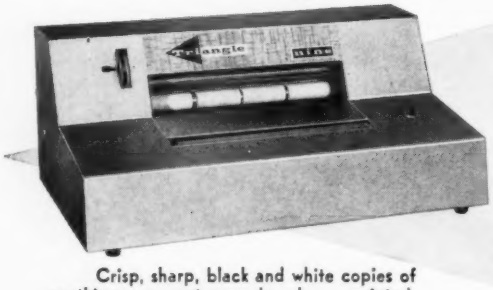
Ludwig offers new unit

F. G. Ludwig, Inc. has added a new 12-inch capacity photocopier to its line of equipment. Called the Contourmatic Mark III, the machine weighs 22 pounds and is portable; it is also said to make photo-exact permanent black and white copies of any mark on paper including ball point pen, colored inks or crayons, spirit duplication, or rubber stamped copy.

American Photocopy Equipment Co. recently announced its new unit, the Apeco Century. This new copymaker is described as inexpensive, efficient, and lightweight (12 pounds). According to Samuel G. Rautbord, Apeco president, the Century is expected to have wide appeal for large organizations which wish to provide photocopy facalities in many departments and locations, rather than in one, for greater efficiency. One of the more important features of the 12-pound unit is that the original document and copy paper are placed in direct

The New Triangle 9

COPIES ANYTHING THE EYE CAN SEE



THE COPYING MACHINE THAT DOES EVERYTHING THE EXPENSIVE ONES DO

Just $99.50

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Crisp, sharp, black and white copies of anything you want reproduced . . . printed, stamped, typed, written or drawn . . . and faster than those costing many times more! Best of all, the TRIANGLE 9 carries a lifetime guarantee of quality and service!

Also available, a full line of high quality photocopy paper

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Please send further information about the TRIANGLE 9 copying machine and new TRIANGLE paper.

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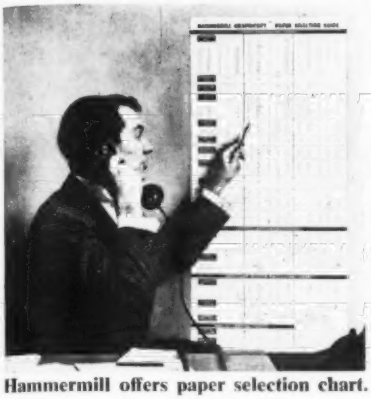
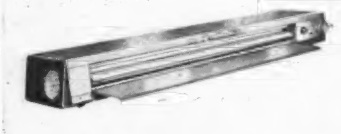


Hammermill offers paper selection chart.

contact with the exposure lamp, increasing exposure fidelity. The Century is also said to copy any document, regardless of original color, up to eight and one-half inches wide, in any length.

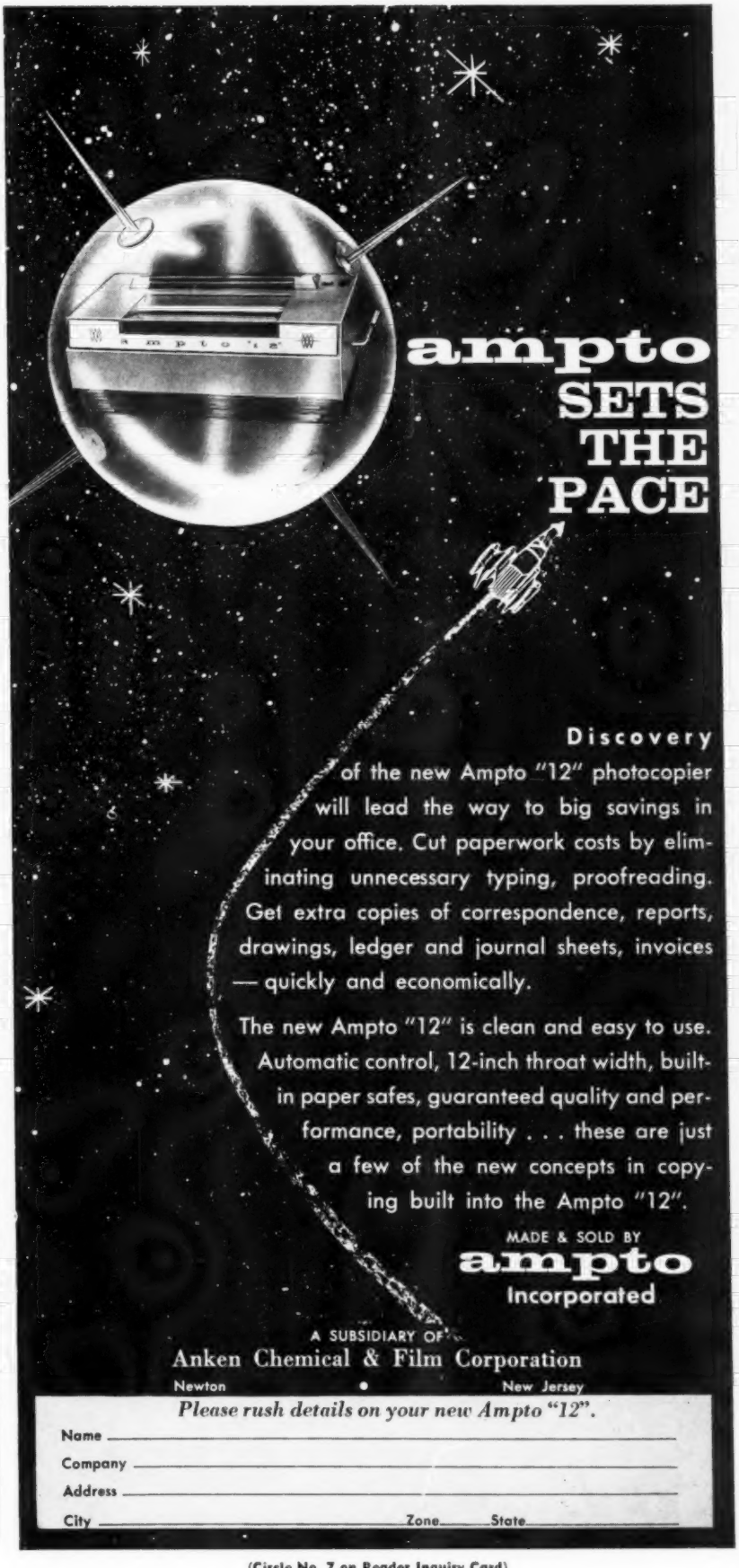
Also recently introduced is Cormac Photocopy Corp.'s new photocopier, the Cormac 300 with flo-tronic control, an electronic device which automatically relieves the operator of all contact with chemical handling. This flo-tronic control, by means of a switch, automatically transfers the exact amount of developer needed for copying from cartridge to tray in the morning. At night, the same switch circulates the developer back to the cartridge. At the end of each cycle, it turns itself off automatically.



Copymation Copymaster white printer.

Copymation recently announced the development of the Copymaster, a compact table or wall mounted 44-inch white printer for office use. It has a variable printing speed range up to ten feet a minute controlled by a knob with full reverse feature. A wide feed table simplifies print feed and return. The Copymaster also has a horizontally mounted, self-sealing chamber which processes several prints simultaneously.

A new machine, said to be "the only dry photocopy device that uses no lenses which tend to go out-of-focus and smog," was recently developed by Savin Business Machine


ampto
SETS
THE
PACE
Discovery
of the new Ampto "12" photocopier will lead the way to big savings in your office. Cut paperwork costs by eliminating unnecessary typing, proofreading. Get extra copies of correspondence, reports, drawings, ledger and journal sheets, invoices — quickly and economically.
The new Ampto "12" is clean and easy to use. Automatic control, 12-inch throat width, built-in paper safes, guaranteed quality and performance, portability . . . these are just a few of the new concepts in copying built into the Ampto "12".
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A SUBSIDIARY OF
Anken Chemical & Film Corporation
Newton • New Jersey
Please rush details on your new Ampto "12".
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Corp. According to Paul Charlap, executive vice president of the firm, the "precision-built" machine is based on a radically new design. He states that electrostatic copies are made in ten seconds on a reflex rather than direct method, and as a result, the machine is capable of copying material from two sides of a page onto two sides of ordinary paper. The paper can be company letterhead or paper offset plate which can be transferred directly onto any standard offset machine to produce thousands of copies.

The copying processes

Photocopying is a copying technique based on the fundamentals of photography. Although in the beginning a darkroom procedure, it has been developed into an enormously simplified lighted-room process which any office employee can operate.

Photocopying techniques, although they vary, all belong to the same basic category—photography—and this is what sets them apart from xerography, Thermo-Fax, or diazo. All photocopying techniques employ a mechanical arrangement in which copies are made through direct contact with sensitized materials, as opposed to the use of a camera.

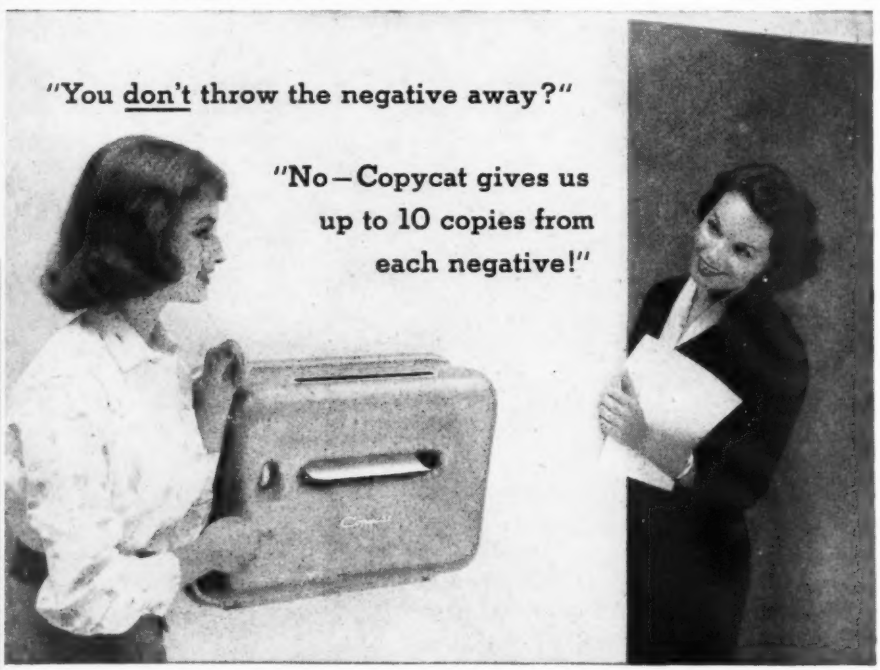
One of the most common techniques is the "transfer" method, in which the original material is placed face-to-face with the sensitized sheet that will become the negative. Original and sensitized sheets are exposed to light in a "printer," or in the "printing" slot of a combination machine. Light passes through the copy sheet to the original where the dark areas (lines and letters) absorb it and the lighter areas reflect it.

The reflected light produces a reaction in the light-sensitive coating of the copy sheet, altering it chemically so that it turns dark when developed. Since copying cameras use true photographic procedures, the original must be exposed, and the final print must be developed, fixed, and washed. Many photocopiers are equipped with a drying section so that copies, which otherwise would have to dry for hours, will emerge in immediately workable condition.

In order to provide a negative that reads from left to right, copies may also be equipped with a prism arrangement. If a black-on-white copy is desired, it can be obtained either by processing the negative as a new original or by using materials that will produce black-on-white positives in one step.

Photocopy equipment, no matter which method is used, is usually available in the form of separate printers, separate processors, or combination models. Combination models are usually of the continuous-flow type and cannot copy from bound volumes. Many companies, however, offer flat-bed printers which can copy either flat or bound material.

Photocopying produces exact copies of the original and is sensitive to a wide range of colors.



Copycat's patented spray process gives you more copies... better copies of anything ...and for as little as four cents each!

...it's the world's fastest photocopy machine—bar none! From start to finish, including all paper handling, Copycat's deluxe new wall model gives you finished ready-to-use copies in 12 seconds.

What's more, because of its patented spray process, Copycat's deluxe wall model will give you up to 10 crisp, clear copies of anything from *one negative!*

No other photocopy machine can offer as many copies—a feature that alone will cut your copy cost to an average of four cents each—*and* repay the initial investment in no time.

The key to Copycat's speedy production of quality copies is its patented spray process. No open trays of developer are used—Copycat utilizes a tank, from which developer is pumped and sprayed and returned to the tank.

This gives faster, more uniform distribution of developer and prevents spilling.

Moreover, unlike other photocopiers, Copycat can be mounted on the wall, to save valuable desk space (or placed on the desk, if you wish).

If you are less than enchanted with present-day copying methods, annoyed at rising costs, messy developers and fuzzy copies—look into Copycat. Write or 'phone for a free demonstration in your own office. Absolutely no obligation.

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GEVAERT

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While most photocopy paper is white, it is possible to obtain it in other colors for color coding and other uses. Copies may also be made on film or on translucent materials. Different types of photocopiers each have their own details of method, but fundamentally they all require the use of specially coated paper and a special solution containing both developer and stabilizer, or two solutions where activator and stabilizer are separate and the developer is actually in the paper itself.

Chemical compounds designed to extend the photocopy method to situations where multiple copies are needed—at less than prohibitive prices—have recently been developed.

The photocopy technique is as yet not appropriate for long runs or the production of a great number of inexpensive copies; but the process, noted for its ability to produce exact copies of a good quality is now suitable for use in instances where perhaps 15, 25, or even more copies are desired.

Diazo

The diazo technique employs a dye, formed by the interaction of two chemicals. They are a diazonium salt (or "diazo") and a combining element described as a coupler. The diazo itself is affected by being exposed to light; when it is exposed it can no longer react to form a dye. During the copying process, the letters and lines of the material to be reproduced actually act as a light shield so that the diazo itself is left active where lines and letters are to appear on the copy. This active diazo interacts with the coupler to form the dye. There are two fundamental techniques:

The first method involves copies to be made on a sensitized sheet, which contains both the diazo and the coupler. These chemicals are prevented from reacting by a third chemical, the "stabilizer." The material which is to be copied is placed face up over this sensitized copy sheet in the diazo machine. A powerful ultra-violet light is passed through the original to the sensitized sheet; it passes wherever

GOOD NEWS

for owners of "peel-apart" photocopy machines

NEW PHOTOCOPY PAPER

with "built-in" developer gives you improved copies *on any* "peel-apart" copy machine

Do you occasionally have to make two or three attempts to get a decent, usable copy? Do you get prints which are yellow . . . which have weak and ghosty blacks?

Would you like to get top-notch prints every time . . . on your first try?

A newly developed paper, High Contrast No. 1, is the answer to your problems. Whether you have an APECO, AMPTO, COPEASE, CORMAC, DRI-STAT, PHOTORAPID or any other "peel-apart" (silver transfer) machine, this new paper will give you the best copies you ever made.

Originally developed to overcome the problems of bad copies during hot weather, High Contrast No. 1 will give you superior prints all year 'round. The secret is in the developer, which is *in the paper* as well as in the solution. This means less frequent solution changes, reducing maintenance.

10 FREE SAMPLES!

We think this paper is so terrific we'd like you to have 10 sheets **absolutely free** so you can try them in your own office on your own machine. We **know** you'll be amazed at the results. Mail the coupon today.

PEERLESS PHOTO PRODUCTS, INC. *Shoreham, Long Island, New York*

Gentlemen:

Your new High Contrast paper sounds interesting. Please let me have the 10 free samples so I can try them out on my own machine.

PEERLESS

I have a _____ photocopy machine.

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SAVE
with
COPYMAKER®

the ECONOMICAL white copy paper

for use on
THERMO-FAX MACHINES
You've never seen anything like it! You get clearer, heavy-weight copies—black or brown—less curl, less crease. Superior contrast, non-glare and non-transparent. Will accept more handling—will endure prolonged exposure to heat and has better file life . . . all this and it costs less. For free demonstration write

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there are no lines or letters. Here, the diazo on the sensitized sheet is broken down so that it cannot react to form a dye when the "stabilizer" is removed.

The "stabilizer" is removed by being neutralized with another chemical. Ammonia is such a chemical. In this first process, the sensitized sheet, after it has been exposed to light, is exposed to ammonia in the form of a vapor. The ammonia vapor neutralizes the "stabilizer," and the active diazo which remains on the copy sheet combines with the coupler immediately. This produces the desired copy.

The second method has the sensitized sheet containing only the diazo. This sheet, which is covered by the original, is exposed to ultraviolet light just as in the first method. It is then brought into contact with a solution containing the coupler. The dye-forming reaction takes place as it does in the first method, producing the desired copy.

Both the first and the second method are most often referred to as "dry." For, although the second method does employ a solution, it is applied with a roller, and enough heat is present so that copies emerge, for all practical purposes, dry.

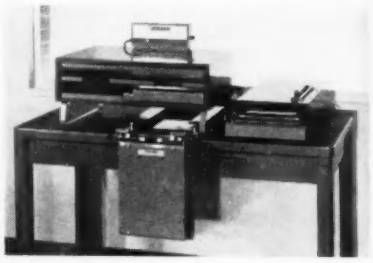
Two steps are required for making copies with either method. However, both are accomplished in automatic sequence within the machine.

The diazo process is dependent upon light passing through the original to the copy sheet, and therefore it will not copy opaque or two-sided originals directly. Most office stationery is translucent enough for the purpose. If two-sided material is to be copied, a translucent copy must first be made. This can be accomplished with photocopy, facsimile, or xerographic equipment. It can also be done directly in some diazo process equipment, using a reflex film designed for the purpose.

The final copies are positives and may be made on paper of various colors. The printing color may also be varied by an appropriate selection of copy paper. By using hand application of chemicals, it is sometimes possible to obtain different printing colors on the same copy sheet. Offset masters may also be prepared by diazo.

The diazo process is relatively inexpensive. Cost of a typical letter-size copy is estimated at between three-quarters of a cent and one and one-quarter cents.

Ektalith is new



Eastman Kodak's new Ektalith system.

Ektalith

Eastman Kodak recently introduced the Ektalith, a new photographic system for use in reproducing documents in quantities of 10 to 1,000. Ektalith system can rapidly make inexpensive paper masters for offset reproduction, or it can make a limited number of direct copies without using the offset process. The Ektalith Method can, in two minutes, produce a master from practically any kind of original. The master can be either an enlargement, a reduction, or the same size as the original.

Facsimile

Basically used for communication devices, the facsimile process has certain copying and duplicating applications helpful in office work.

The greater part of facsimile equipment is fundamentally useful for long-distance communication. (It is used, for example, to transmit telegrams directly from a central office to the office of a subscriber.) In effect, it provides single-copy duplication at a distance. However, it can also provide copies close at hand, and some equipment is now designed for office use.

The technique itself is fundamentally a photo-electric one. Both

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Ozalid, Dept. 121, Johnson City, New York

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the original material and the sheet on which the copy will be reproduced are "scanned" simultaneously, and in synchronization. Usually, the material to be copied is wrapped around a rotating drum; the copy sheet is wrapped around a second drum. A narrow light beam passing in a continuous track over the surface of the material to be copied is reflected into a photo-electric cell. There it generates a current which varies with the strength of the reflected light. (Strength is dependent upon its reflection from a light or dark area.) The current thus generated is transmitted to the receiving unit of the machine where it activates a stylus, which passes over the face of the copy sheet in synchronization with the original light beam. Through the stylus, the electric current "burns" the image onto the sensitized copy sheet.

In some machines, the material to be copied is "scanned" as it enters the machine, rather than being wrapped around a drum. Units of this type may receive copy of unlimited length.

Receiving units may be modified so that the stylus can be used to make minute holes in the copy sheet. Thus, the machine can reproduce an image on a conventional stencil for use with standard stencil duplicating machines.

Because scanning can usually be set in spacing as close as 750 to the inch, the facsimile process can be used to transfer art work (including photographs), drawings, letterheads, and other detailed material—as well as typed or written matter—to stencils. Used with appropriate materials, it can copy such material onto masters for gelatin, offset, and spirit duplicators, or prepare translucent copies for use with diazo equipment.

Thermography

Thermography is the term used to describe the process derived from the use of a machine with the brand name Thermo-Fax. The process is based on the fact that dark substances, such as office ink, tend to absorb more light than light-colored substances. In the process of absorbing light, the dark substance generates heat. It is this heat which "burns" the copy paper, producing the image.

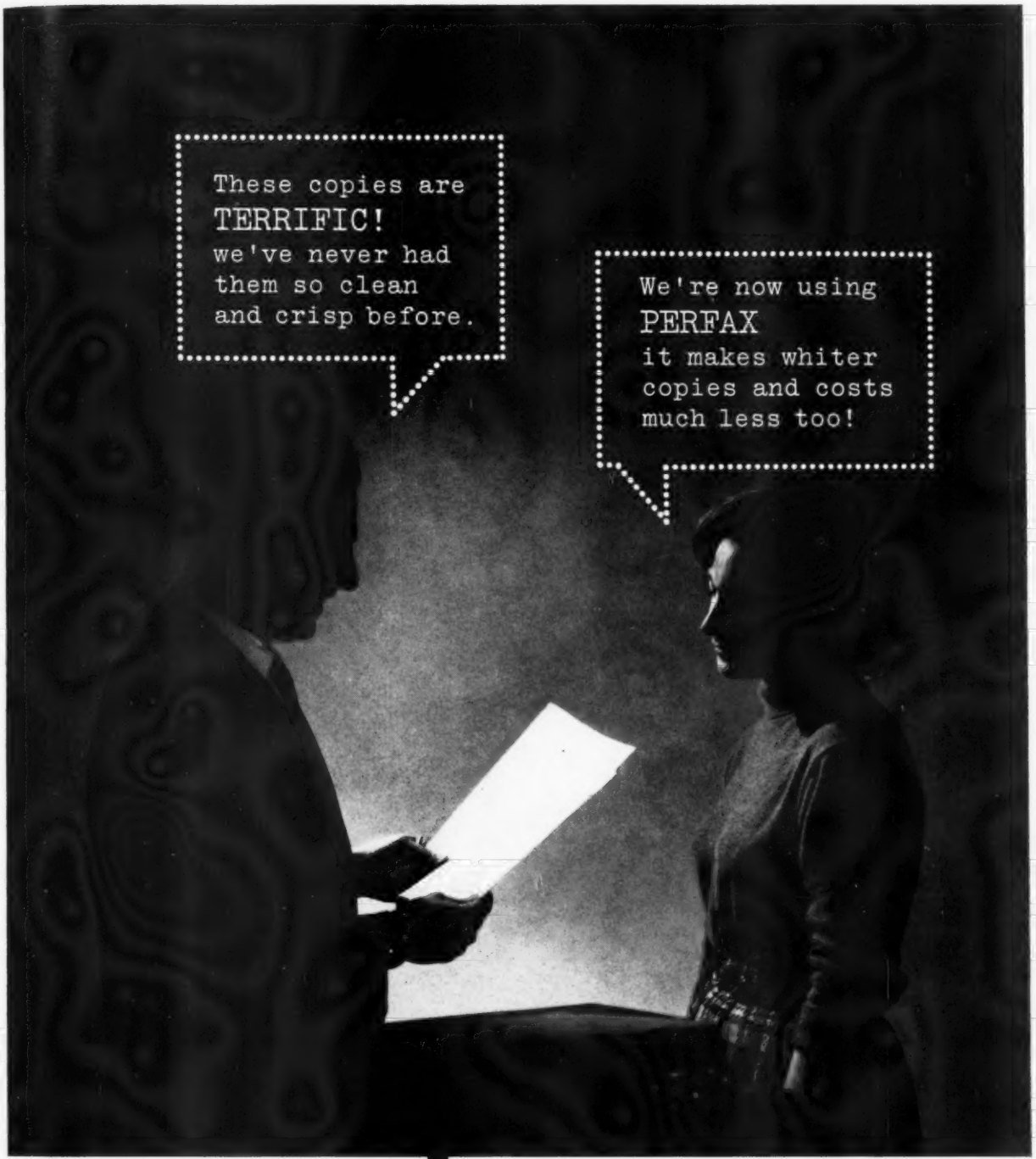
The copy paper used is heat-sensitive, and responds to heat by turning dark. Mechanically, the process operates as follows:

COMPARISON OF OFFICE COPYING PROCESSES

COPYING PROCESSES. These processes are used to copy original material, including letters, art work, photographs, drawings, letterheads, etc. They are ordinarily used for making from one to ten copies, though new photocopy processes make multiple copies relatively economical, and most copying processes can also prepare stencils or masters for one or more of the duplicating processes.

Process	Speed*	Cost Per Copy*	Can Process Enlarge or Reduce?	Duplicating Processes for Which Stencils or Masters Can Be Prepared	Characteristics of the Process
Diazo	200-800 copies per hour	about 1 cent	No	Offset	Copies are positives, in various possible colors. Translucent, one-sided originals required, or translucency must be made first. Process sensitive to most colors, less so to purples.
Facsimile	1 copy in 3 minutes	5 cents	No	Offset; Stencil; Gelatin; Spirit	Copies are positives on specially treated paper. Process is used widely for wire communications, is getting increased use for stencil cutting.
Photocopy	1 copy in 15 seconds —1 minute	4-9 cents	Most cannot	Offset; Stencil (in special units)	Copies are positives on white or colored coated paper; some units make negatives. Sensitive to wide range of colors. Can make translucencies for diazo process. Some units can make several prints from one negative, and a number of companies now offer single-sheet multiple-copy processes, which utilize the original negative as master.
Thermo-Fax	1 copy in 4 seconds	4½-5 cents	No	None	Copies are positives on buff or colored paper having a wax-like finish which can be reinforced with heavier backing. Process less sensitive to some kinds of ink.
Verifax	1 copy in 50 seconds; 5 in 1 minute	9-10 cents (single); (1 cent for extras)	No	Offset	Copies are positives on bond or similar non-sensitized paper. Several prints can be made from one matrix. Process is otherwise similar to photocopying.
Xerography	1 copy in 3 minutes	5 cents	Yes	Offset; Spirit	Copies are positives on various kinds of paper or film. Process is widely used to make offset masters. It is sensitive to wide range of colors. Can make translucencies for diazo process.
Ektalith	1 copy in 2 minutes	16 cents	Yes	Offset	Low cost offset masters for direct copies or short duplicating runs. Sensitive to wide range of colors. Copies almost any color without need of filters.

* Speed and copy costs are estimates for letter-size copies using materials of average quality and runs of average length. As circumstances vary, figures above or below those listed may be obtained. Speed figures allow not only for machine differences but for differences between manual and power operation.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(*From page* 80)

The copy paper is placed with its heat-sensitive coating face up, on top of the material to be copied. In the Thermo-Fax machine, the two sheets are exposed to an infrared light source. The light passes through the copy paper to the original. Where the light strikes the darker areas formed by letters and lines, it is absorbed, generating heat. The portions of the copy paper directly above the lines and letters turn dark, thus reproducing the material beneath.

Copies are produced in a single step in the thermographic process. Since no solutions are used, the copies are completely dry when they came out of the machine. Thermography is an extremely rapid process — letter-size copies can be made in about four seconds.

Equipment for the process is available in two types: flat-bed printers, which can copy from bound material, and continuous models. Machines of the continuous type are designed so that original and copy paper are inserted, brought before the light source, and emerge by mechanical means.

The process is extremely satisfactory when copying materials printed in a heat-absorbing ink, such as those with a carbon base, or in pencil. Certain inks, particularly some of the blue ones, may not record at all. These may be utilized to make notations on the original which are not desired on the copies.

The copy paper is translucent and has a smooth, wax-like finish. Standard paper is buff-colored, but other colors including white are also offered. Printing is blue-black. The copy paper is light-weight; if reinforcement is desired, inexpensive back-up paper may be bonded to it within the machine itself.

Verifax

The verifax process is a variant of photocopying. It differs from the latter in that it is able to make copies on ordinary, non-sensitized papers, and in its ability to produce at least five copies from a single exposure to the light source.

During the verifax process, the original material is placed face-to-face with a sheet of sensitized paper called a "matrix." Original and matrix are exposed to a light source in such a way that the light passes through the matrix to the original. Thus, in this first step, the process corresponds to that used in most transfer photocopying. As in that process, the dark areas of the original absorb the light, while the lighter areas reflect it.

Where the reflected light strikes the light-sensitive matrix, a chemical reaction occurs, which inactivates those areas of the matrix. After exposure to the light source, the matrix is placed in the developing section of the unit, where it is processed by an "activator" solution. Those areas on the matrix which correspond to the dark areas of the original now react to form a dark, dye-like substance. This substance is transferred to the final copy sheet.

In order to effect the transfer, a sheet of non-sensitized copy paper is placed face-to-face with the matrix as it emerges from the developing unit. The two sheets are pressed together by squeegee rollers. As a result, a layer of the dye is transferred to the copy paper to make the final reproduction of the original.

However, not all of the dye is removed. A sufficient amount remains on the matrix to make about four more copies. If lighter copies are acceptable, with care, as many as 10 can be made.

Since the end copy does not pass through a solution, it emerges completely dry. The verifax process, like the photocopy process, can copy a wide range of originals: art work, letterheads, typed, drawn, or handwritten material, and coarse-screen photographic half-tones. Since it uses the reflex method of exposure, it can copy opaque or two-sided originals without an intermediate step. Copies can be made on card stock and, if desired, on both sides of a sheet.

The process can also make offset masters in about one minute using an accessory unit. The first copy takes about 50 seconds to make, but additional copies can be made more rapidly.

Xerography

The xerographic process is based upon the fact that electrical charges of like polarity repel each other, while unlike charges attract. Here is a brief description of the process, step by step:

First, using a copying camera, the image of the material to be copied is projected onto a coated plate that bears a positive electrical charge. Light acts on the plate to cancel the electrical charge. Since light is reflected only by the lighter-colored portions of the original, the plate retains its charge in these areas which correspond to the dark lines and letters of the original. Therefore, the image has now been copied in the form of an invisible electrical charge. During the developing phase, a dark resinous powder which carries a negative electrical charge is passed over the plate. Because unlike electrical charges, attract, the powder adheres to those areas of the plate which represent the letters and lines of the original, thereby making the image visible.

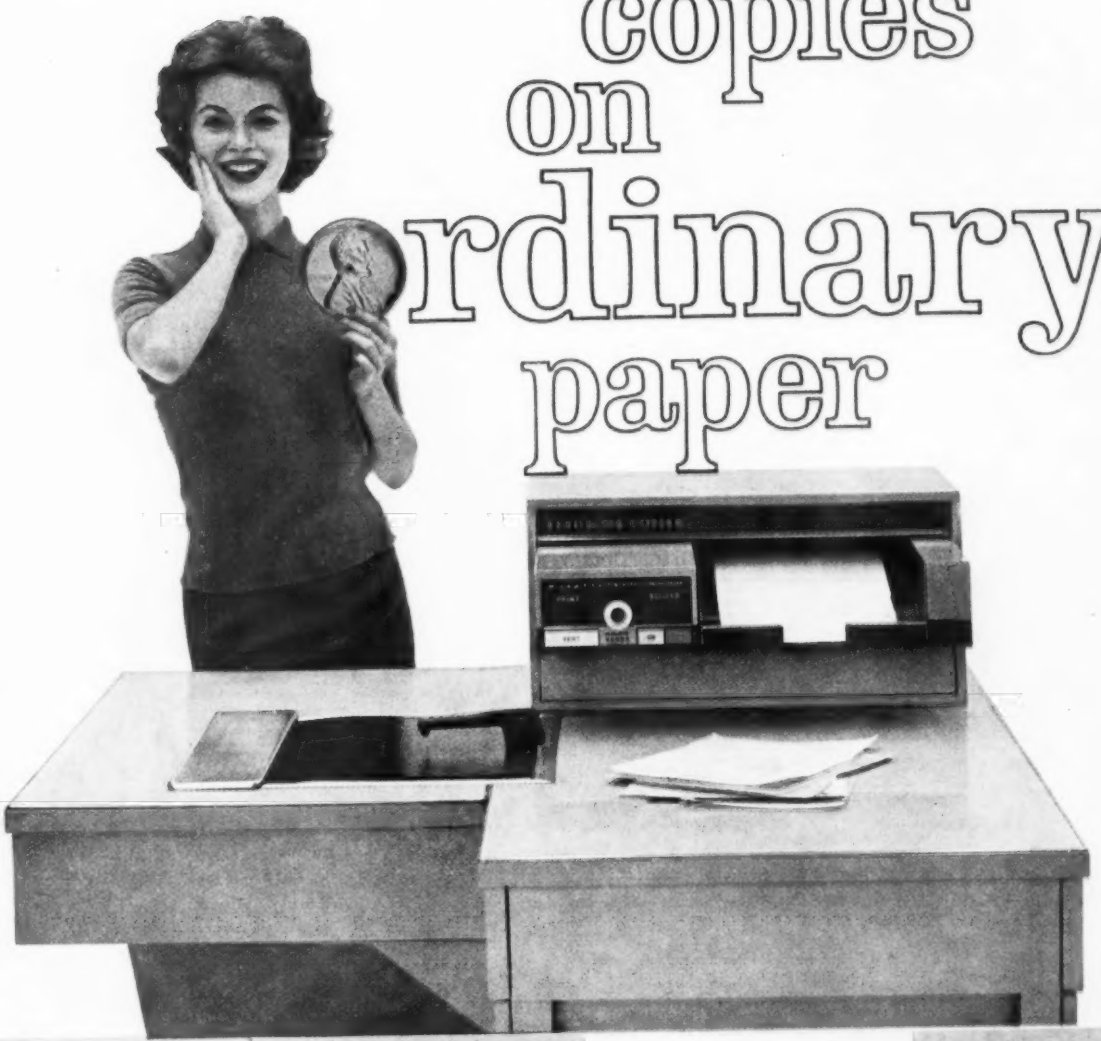
In order to make the copy, a sheet of paper which is positively charged is placed over the plate. A portion of the negatively charged powder is attracted to the paper. (It is possible to obtain up to eight copies from the powder which remains on the plate.) The paper, with the powder adhering to it, is then placed in a "fuser," where it is exposed to heat. This embeds the powder firmly in the paper and produces a permanent copy.

In the same manner (and at the same time that paper copies are being made) a paper offset master can be produced.

The process can also make presensitized positive working metal offset plates, spirit masters, and translucent copies for use with diazo.

The xerographic process is able to copy typed and handwritten material, drawings, protographs, art work, letterheads, and so on. The original material can be opaque and two-sided, since the image of the original is reflected on the plate.

makes copies on ordinary paper



Supplies cost about 1¢ per copy

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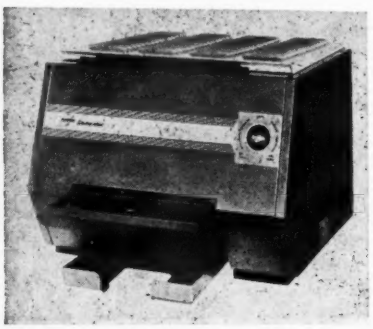
OFFICE COPIER

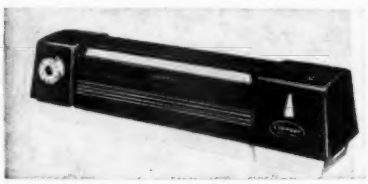
Copies are usually black on white paper, but paper of various colors and weights can be used. Some cameras permit enlarging and reducing. Although single copies usually take approximately three minutes to make, some new equipment using the xerographic process is of the continuous flow type. Here, the entire process proceeds automatically once the original material has been fed into the machine, thus making very high speeds available to the office using the machine.

Haloid Xerox's Xerox 914 is described as being the first fully automatic office copying machine to appear on the market to date. It is said to require no sensitized or treated papers, nor to need any exposure of developing adjustments. The required number of copies may be made by simply setting a dial. It is not necessary to handle the copy paper, or to rehandle the original for the multiple copies. In this respect it resembles a short-run duplicating machine rather than the conventional copier.

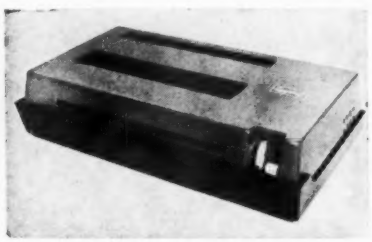


Apeco's Electro-stat photocopy machine.

Copycat's continuous machine is designed to be mounted on walls.



Copease line has three automatic models.



Copy-craft line has flat-bed models.

The Manufacturers

Addressograph-Multigraph, 1200 Babbitt Rd., Cleveland 17, Ohio. The Multilith Duplimat master, while itself a part of the duplicating process, is produced by a Kodak Verifax copier. Material to be copied is exposed in the copier and a matrix is developed. From this master, up to a thousand copies are made directly from the original on a Multilith duplicator. **T-1**

American Photocopy Equipment Co., 2100 Dempster St., Evanston, Ill. Apeco's Auto-Stat line comprises three machines, which make copies ranging in maximum width from 11 to 14 inches, depending on the model. A special unit is available for copying bound material. The line features compact design (some units are portable) and speed; about 9 seconds for a black on white copy. Price range: $227.50 to $423.50. In addition, the company offers the Copy Quik process, a multiple copy process which utilizes the original transfer negative as a master for making additional copies, each additional copy requiring only one sheet of paper. The Copy Quik process requires a different developer from that used in normal diffusion-transfer photocopying. For use with the Apeco Uni-Matic or Dial-A-Matic machines, or competitive equipment, an accessory processor is normally required. If used with Apeco's Director model, an additional tank only is required. **T-2**

Ampto, Inc. (Subsidiary of Anken Chemical & Film Corp.), 9 Hix Ave., Newton, N. J. Ampto offers two models, one accommodating material 9 inches wide by any length, the other taking material up to 14 inches wide by any length. The smaller unit is portable and has a carrying handle. Price range: approximately $189 to $379. *Anken Film Co.,* another subsidiary of the parent corporation, offers the Plenacopy process, which can be used to make multiple copies from transfer negatives made on any machine. The process utilizes the transfer negative, heretofore usually discarded, as a master for making additional copies, using only one sheet for each additional copy and eliminating the peel-apart step. (The transfer negative must be dried with the least possible exposure to light, though not necessarily in a dark-room.) When the Plenacopy process is used with machines of the Ampto type, a second processing solution tray is all the additional equipment needed. A Plenamatic processing unit, for use with other brands of photocopiers, is also available. **T-3**

Copease Corp., 425 Park Ave., New York 22. The Copease line comprises 12 models, including three fully automatic machines, two book copiers which combine exposure and developing of copies of pages from bound volumes, and a variety of separate exposing and developing units in different sizes. The smallest model will take copy up to 8½ by 14 inches. Of larger machines, one will take copy 17 by 24 inches, another will take copy 14 inches wide, and of any length. (Additional information on previous pages.) Price range: $250 to $397. **T-4**

Copycat Corp., 215 Park Ave. South, New York 3. Copycat offers four continuous-type machines which will accept copy of any length, in maximum widths ranging from 9 to 18 inches, depending on the model. Two of the machines (with maximum copy widths of 10 and 14 inches respectively) can be attached to a wall mounting. In these two machines paper is sprayed

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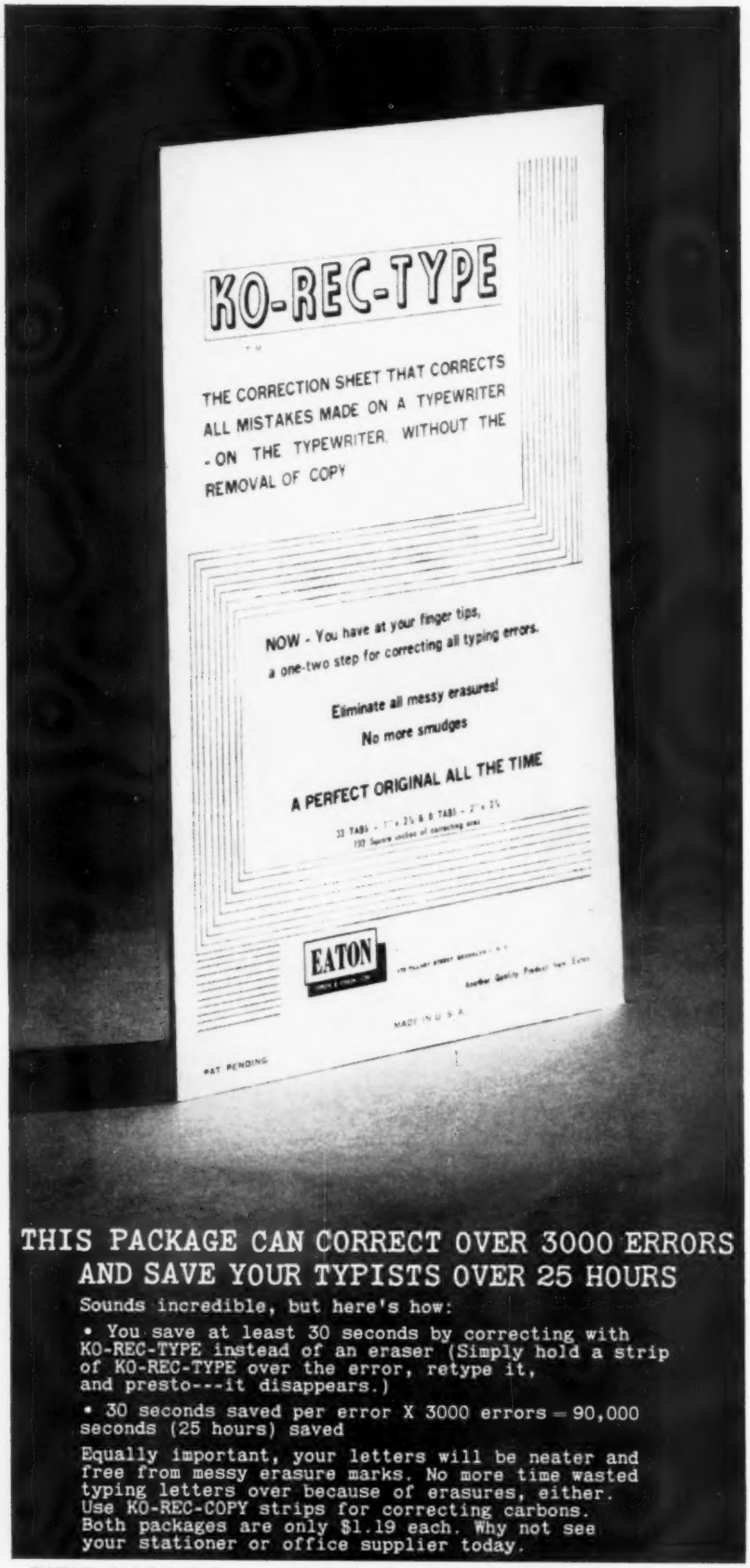
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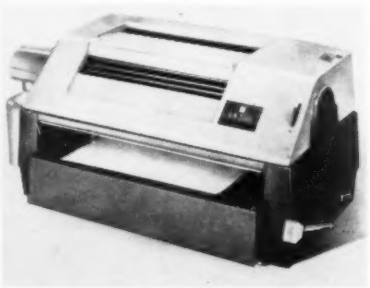
with developer, rather than being immersed in it.

Copycat also offers separate printers (flat-bed) and developing units.

Copy-Craft, Inc., 105 Chambers St., New York 7. The Copy-Craft line comprises five electrically powered and three manually powered models. Among the machines are some of the flat-bed type, which can copy pages from bound material. The smallest Copy-Craft model will take copy up to 8½ by 14 inches. One of the largest models will accept copy up to 18 by 24 inches; another will take material up to a maximum width of 15 inches and of any length. Price range: $178 to $329. Also, special Compak Unit which will handle the printing and developing of offset plates. **T-5**

Cormac Photocopy Corp., 80 Fifth Ave., New York 11. Cormac offers seven models, including flatbed (which can copy from bound volumes) and continuous-type machines. The smallest model will accept copy up to 8½ by 14 inches; the largest will take copy up to 18 inches wide and of unlimited length. Price range: $149 to $374. In addition, Cormac offers the Poly-Copy Process, which utilizes the transfer negative—from any photocopier — as a master for making multiple copies; the process eliminates the peel-apart step in making copies in quantity. The Cormac Poly-Copier will accept material up to 9 inches wide by any length. (Additional information on previous pages.)

Cormac also recently introduced new Cormac "500" copying device



A. B. Dick's versatile Model 110 photocopier is said to be especially adapted to copying accounting work sheets and engineering drawings.

with Flomatic control. Machine is said to copy everything in one step and requires no solution handling.

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31. Company has electrically powered photocopy machine which accepts copy in sizes up to 9 by 14½ inches, and which can copy bound material. Recently announced is new Model 110 Photocopier with improved operating features. (Additional information mentioned previously.) **T-7**

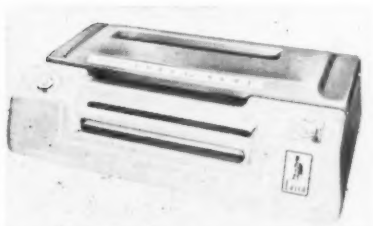
Duophoto Corp., 236 Fifth Ave., New York 1. Duophoto manufactures the Duomatic machine, which will accept copy up to 14 inches wide by any length. Price: $695.

Duophoto also offers the Quanticopy process, designed to utilize the transfer negative as a master for making single-sheet multiple copies. The Duophoto Corp. is a distributor for the Photorapid line. (See Photorapid listing.) **T-8**

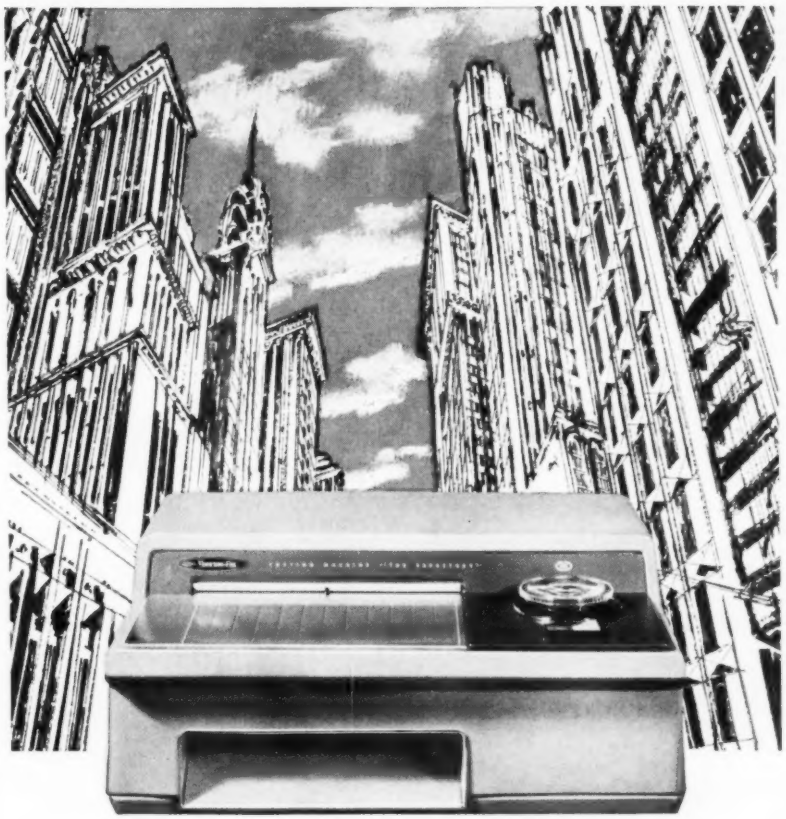
General Photo Products Co., Inc., P. O. Box 23, Chatham, N. J. The Genco Exact-Fax line includes printing units, developing units, and combination models. The smallest combination model will take copy up to 9½ by 15 inches. Another can take copy to a maximum of 20 by 40 inches. One machine, available in portable or desk model, will take copy 9½ inches wide by any length; a larger machine will take copy 12 inches by any length. A combination outfit, consisting of a continuous printer and continuous processor, takes copy up to 20 inches wide by any length. Price range: approximately $95 to $450.

Firm also has new model Genco Porta-Fax photocopying machine which automatically exposes, processes, and prints 60 to 120 copies per hour. **T-9**

Gevaert Co. of America, Inc., 221



Hunter's new Royal Scot Laird model makes any desired number of copies from single negative.



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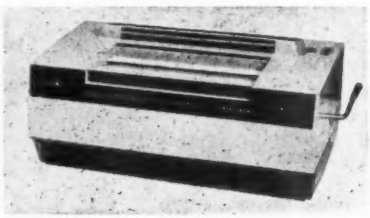
W. 54th St., New York 19. Gevaert's sensitized photographic products are distributed through A. B. Dick; Royal McBee; Photorapid; Savin Business Machines; and Copycat. **T-10**

Hunter Photo-Copyist, Inc., 566 Spencer St., Syracuse, N. Y. Firm makes Royal Scot Copymor Equipment. New machine makes any number of copies from one negative. **T-11**

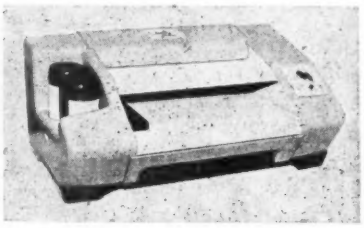
Kenro Graphics, Inc., 25 Commerce St., Chatham, N. J. Kenro's process cameras, while not photocopiers in the sense used in this section, can be used to prepare, by photographic methods (using certain accessories) plates which can be run on office-size offset duplicators, and xerographic plates. The Vertical 18 Process Camera produces negatives to 14 by 18 inches. With the Prismatic Head (for photocopies), maximum negative size is 12 by 18 inches. With Xerographic head, 11 by 14 inches. Camera price: $1,250. Prismatic head: $427. Xerographic head: $100. **T-12**



Ludwig offers new Contoura line.

F. G. Ludwig, Inc., Coulter St., Old Saybrook, Conn. Ludwig offers the Contoura line, comprising five electrically powered and three manually powered machines. The smallest machine will take copy up to 8 by 10 inches. The largest will accept material of a maximum width of 14 inches, and of any length. Among the Contoura models are three which will copy bound material. Contoura also offers the Plenacopy process developed by Anken Film Co. (Additional information on previous pages.) **T-13**

Nord Mfg. Corp., 366 Jericho Turnpike, Mineola, L. I., N. Y. The Nord line comprises three models, the smallest of which will take copy up to 9 by 15 inches, the largest of which will accept material up to 15 by 18 inches. The machines will copy bound material, and some will transfer material to special, sensitized offset plates. Price range: approximately $179 to $345. **T-14**



Peerless photocopier uses new process.

Peerless Photo Products, Inc., Shoreham, L. I., N. Y. Peerless' line of Dri-Stat photocopy units includes five continuous type machines, and one flat-bed printer, which can copy from bound material. Continuous-type units can take copy of any length, and in maximum widths of 9 to 14 inches, depending on the model. Special feature is automatic feed through processor. Price range: $195 to $685. In addition, Peerless offers a new process called Quick Silver. This can be used to make a single auto-positive copy (white on black) in a single sheet operation or to make multiple copies from a single permanent negative, produced in a single-sheet procedure which eliminates the peel-apart step. One Quick Silver combination printer and processor is available, taking copy in a maximum width of 9 inches, and of any length. (A larger model is also planned.) A separate processor, designed for use with Peerless or other brands of photocopy equipment is also available. Price range: approximately $150 to $350. Peerless also offers the Copy-Cart, a mobile unit designed for continuous-flow copying of as many as 450 8½ by 11 inch originals per hour.

Photorapid's newest model is Electra.

Maximum copy size accepted is 9 inches by any length. In copying, machine reduces material to 70 per cent of size of original. Price: under $5,000. Also, Peerless has new Copy-Cart portable camera with cutter mechanism. Unit copies all types of originals and produces 450 8½ by 11-inch copies or 1200 check-size copies per minute. **T-15**

Photorapid. The Photorapid line, manufactured in Switzerland includes electrically powered models of both the flat-bed and continuous type. The smallest machine will take copy up to 9 by 14 inches; the largest will accept material up to 24 inches wide and of any length. Some models can copy from bound material. The Photorapid line also includes MagiPlate, an aluminum offset plate, maximum size 11 inches, which can be made on the Photorapid Transfer Unit for use on offset machines. Price range for machines (approximately): $169 to $549. The Photorapid line is distributed in this country by: *Duophoto Corp., 236 Fifth Ave., New York 1; W. F. Mullen Co., 3620 Oakton St., Skokie, Ill.; Pacific Copy Co., 142 Oregon St., El Segundo, Calif.* **T-16**

Photorapid also has new photocopy machine called "Electra," mentioned previously.

Photostat Corporation, 1001 Jefferson Rd., Rochester 23, N. Y. The company offers the Photostat Instant Copier available in two models. Maximum size of printed area is 8½ by 11 or 14 inches, depending on the model. An adapter is available for making offset plates. Photostat also distributes Verifax equipment. (See "Verifax" section.) Photostat's photocopy line comprises photographic equipment of the camera type (as opposed to the contact or transfer type sometimes implied in the term "photocopier"). The line includes models which can make prints 8½ by 11 inches or smaller, and ranges to models suitable for engineering drawings and other large material, which can print areas up to 18 by 24 inches. The equipment can enlarge or reduce. Both negative and positive right-reading copies can be produced. Features include automatic processing, special subject holders for automatic feed, book holders, registration devices. Price range: approximately $1,395 to $13,530. **T-17**

Remington Rand Division, Sperry Rand Corp., 315 Park Ave. South, New York 10. Remington Rand's machines include continuous type and flat-bed printers of the Transcopy line, as well as camera-type equipment of the Dexigraph line and a variety of microfilm units. Transcopy units include combination printers and processors as well as separate processors. **T-18**

Robertson Photo-mechanix, Inc., 7440 Lawrence Ave., Chicago 31. Robertson offers a line of camera equipment and accessories which can be used to prepare xerographic plates for duplicating. **T-19**

Rovico Inc., 318 Market St., Newark 2, N. J. Rovico's Fotomate line includes three continuous-type machines, accepting copy in maximum widths of 12, 15½ and 19½ inches, depending on the model; all accept copy of any length. An additional attachment permits copy-

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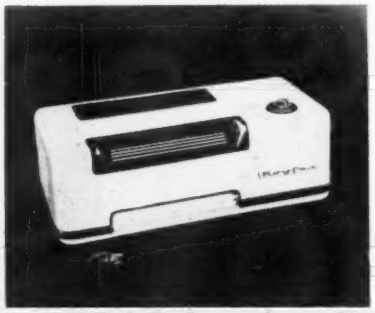
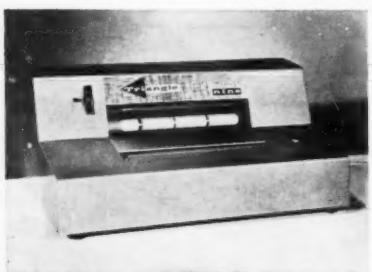
ing from bound volumes. Price range: $225 to $425. In addition, Rovico offers the Rovi-copy process for making multiple copies from one negative, using a single sheet for each copy.



Royal McBee's Royfax copying machine

Royal McBee Corp., Westchester Ave., Port Chester, N. Y. In addition to copying letters and other business documents, the Royfax office copier makes paper transparencies from engineering work sheets or Diazo copy to produce masters for blueprint machines. Machine makes metal offset plates for duplicating. Using various papers available, the Royfax unit can make a single copy, or as many as 15 to 18 copies from the same negative. According to the manufacturer, the most popular unit is the RF-25, which sells for $220. **T-20**

Savin Business Machine Corp., 161 Ave. of Americas, New York. (Information on previous pages.) **T-21**



Triangle's new "Nine" photocopier

Smith-Corona Marchant, Syracuse 1, New York. Firm has three new photocopy machines: the Vivicopy 9, 12, and 14, all of which copy anything on white, standard weight paper. Models operate on the diffusion transfer principle, utilizing light and a developer for the instant transfer of an exact image on white sensitized paper. The model designations of "9", "12", and "14" are according to paper width capacity. The 9-inch capacity model is priced at $99.50; the 12-inch at $269.50, and the 14-inch at $289.50. **T-22**

Triangle Business Machines, Inc., 1808 South Main St., Los Angeles 15, Calif. Firm has photocopy machines Triangle 9, Universal 100, and Dri-Mate. Triangle also has complete line of photocopy paper—white and colored, regular and special sizes, single or double sided, in bond, air weight, or card stock. Also transparent and translucent papers, and clear and matte films. **T-23**

Diazo

Charles Bruning Co., Inc., 1800 W. Central Rd., Mt. Prospect, Ill. Bruning's Copyflex line includes

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eleven models, all of which take copy of unlimited length, in widths ranging from 11 to 54 inches, depending on the size of the model. Desktop units can process up to 13 linear feet per minute; the largest model up to 75 feet per minute. The machine can print in several colors; with hand developing, multicolor prints can be obtained. Paper colors available are blue, pink, green, salmon, yellow, and white. Most Copyflex models feature automatic separation of originals from copies. Price range: approximately $295 to $7,800 (F.O.B. Mt. Prospect). **T-24**

Copymation, Inc., 5650 N. Western Ave., Chicago 45. Seven models are offered, accepting copy in maximum widths ranging from 26 to 45 inches, and of any length. Operating speeds range from 14 to 75 feet per minute, according to the machine. Some models feature automatic separation of original and print; others offer semi-automatic manual separation of original and print. Also, "Dart," a new desk-top copier. (Additional information mentioned previously.) **T-25**

Ozalid, Div. of General Analine & Film Corp., Johnson City, N. Y. The company offers eight models, ranging from the desk-top machine for letter-size copies to large machines which take copy up to 54 inches wide. Operating speeds are from 10 to 100 feet per minute, depending on the model. Price range: $410 to $10,995. Through its subsidiary, Reproduction Products Co., Detroit, Mich., the company offers a machine of the diazo-moist developing type called the Viking, which will accept copy up to 18 inches wide and operates at speeds up to 18 feet per minute. Price: approximately $550. Ozalid is also distributor for the Pelprinter, a portable diazo unit.

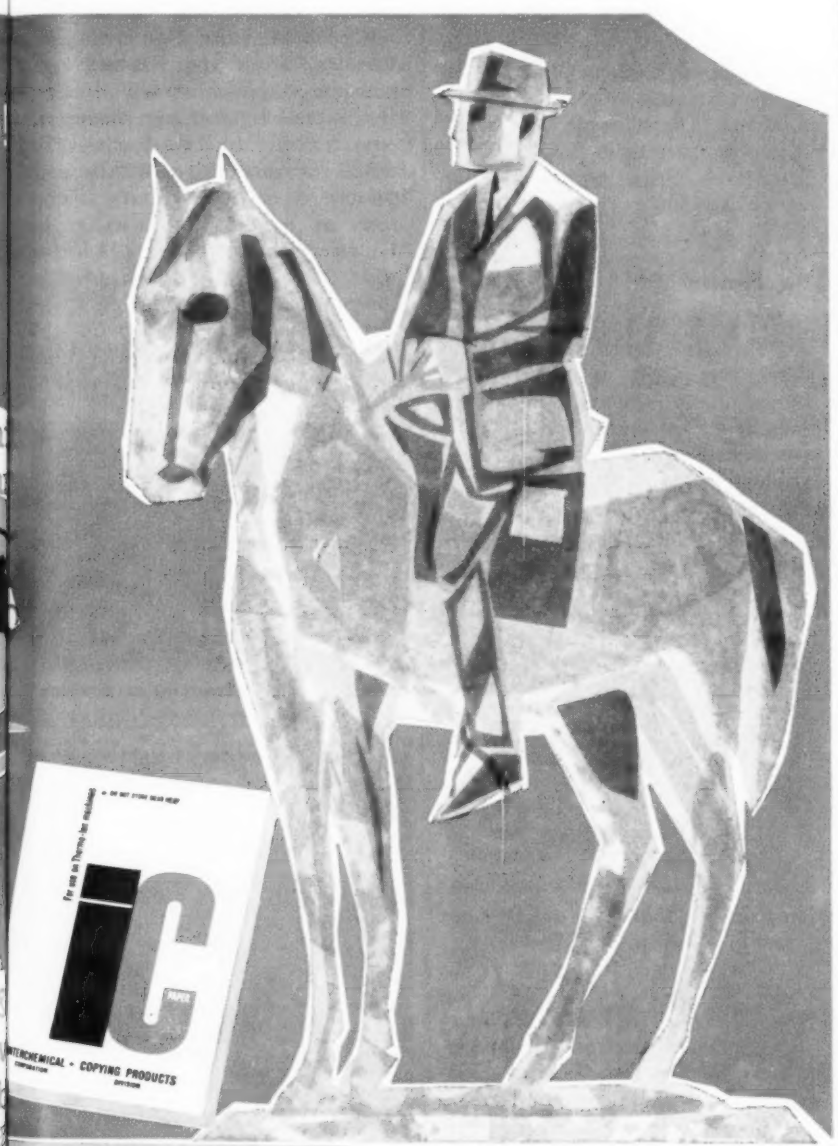
Firm also has new whiteprint copying machine, a tabletop model, called the Ozamatic 60. Also, the new "one-step" Junior Ozamatic, and new Super Ozamatic. **T-26**

Paragon-Revolute, Div. of Charles Bruning Co., Inc., 77 South Ave., Rochester 4, N. Y. The Revolute line comprises four electrically powered models which accept copy in widths ranging from 24 to 54 inches, depending on the model, and in unlimited lengths. Speed of operations is 125 feet per minute (optimum). Printing colors available are blue, black, red and sepia; paper colors are white, pink, yellow, green, blue. Price range: approx. $2,050 to $10,900. **T-27**

The C. F. Pease Co., 2601 W. Irving Park Rd., Chicago 18. Pease specializes in large-scale models; smallest machine is 42 inches wide. The firm's "Scout," prints copy up to 45 inches in width and of practically any length, at speeds up to 20 feet per minute. Price range: for the "Scout," $1,375 and up (F.O.B. Chicago). **T-28**

Pelprinter, Inc., 555 Central Ave., Orange, N. J. (See: Ozalid)

Reproduction Engineering Corp., Ivoryton, Conn. (Formerly Peerless Colonial Products, Inc.) Company offers three Blu-Ray models, accepting copy to widths of 14 and 42 inches, respectively, and operat-



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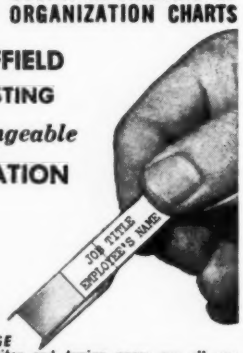

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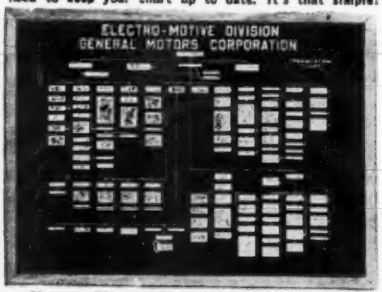

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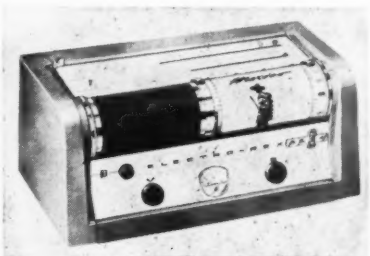
ing at speeds of up to 4½ feet per minute. Machines are compact, and can be set on table tops. Price range: approximately $197.50 to $287.50. **T-29**

Technifax Corp., 195 Appleton St., Holyoke, Mass. Five electrically powered and two manually powered models are offered. The largest model prints in widths up to 54 inches, and lengths to 500 yards, at speeds up to 125 feet per minute. The company's newest development is the Slidemaster System which produces Diazochrome R multicolor transparencies for overhead projection. Price range: approximately $17,500. **T-30**

Facsimile

Rex-Rotary Distributing Corp., 387 Park Ave. South, New York 16. The Electro-Rex is an electronic stencil cutter which can produce stencils or plates from drawings, typed matter, office forms, screened photographs, etc. Maximum size of the printed area is 8 by 12½ inches. Scanning may be set at spacings from 125 to 750 lines per inch. Price: about $1,913.60. **T-31**



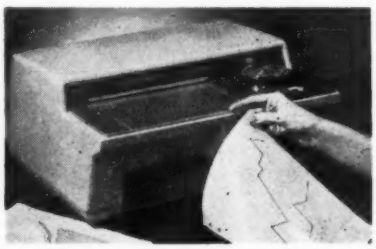
Rex-Rotary's Electro-Rex stencil cutter

Westrex Corp., 540 W. 58th St., New York 19. This company's Stenafax equipment electronically makes masters for the stencil, offset, and gelatin processes, as well as single copies. Two models are available for making copies in sizes to 8½ by 14 inches. The machine can copy full-tone, half-tone or line copy at the same time. Price: approx. $1,895. **T-32**

The Western Union Telegraph Co., 60 Hudson St., New York 13. While Western Union's Intrafax equipment is intended primarily for communications, it can make printed copies of typed matter, handwritten matter, sketches, etc. in the process. It can thus be used for single copies, or to make masters for the offset and hectograph processes. **T-33**

Thermo-Fax

Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul 6. Three Thermo-Fax machines are offered, all of table-top size. One model, the Premier, is of the flat-bed type which can copy from bound material, as well as flat sheets; maximum copy size is 9 by 14½ inches. The other two models are of the continuous type: the Secretary accepts copy up to 8½ inches wide; the Fourteen takes copy up to 14 inches wide. Copy length is unlimited. The company also offers supplies designed for special uses with the equipment, including pencils, inks, typewriter ribbons, special papers,



3M's Secretary Thermo-Fax machine

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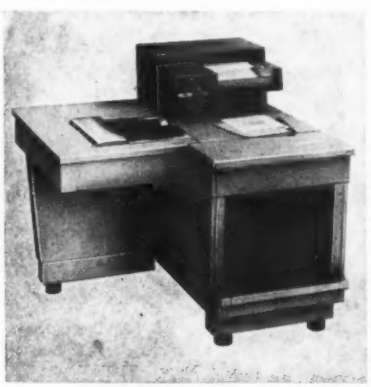
etc. (Additional information mentioned previously.) **T-34**

Verifax

Eastman Kodak Co., Rochester 4, N. Y. The Verifax line includes four machines which can copy any color original in maximum sizes ranging from 8½ by 11 to 10 by 16 inches. Price range: $99.50 to $425. The company also offers Verifax Offset Adapters which utilize the Verifax process to make transfers onto paper offset masters which will provide a run of 1,000 or more copies. Two models are available with maximum copy sizes of 9 by 14 inches and 10 by 16 inches respectively. Price: approximately $98.50. **T-35**

Xerography

Haloid Xerox Inc., 6 Haloid St., Rochester 3, N. Y. Aside from the new Xerox 914 Copier mentioned earlier, the Xerox line includes cameras, fusers, processors, continuous printers, and accessories. Cameras, depending on the model, can enlarge, reduce, or make same-size copies. Panel and book holder attachments are available for use with copying equipment. Single copies, can, of course, be made, but the equipment is especially suitable for making masters for offset, diazo, or spirit processes, thus serving as a valuable adjunct to duplicating systems. Xerox Copyflo continuous printers use the xerographic method to reproduce material, particularly from microfilmed frames or roll microfilm. **T-36**



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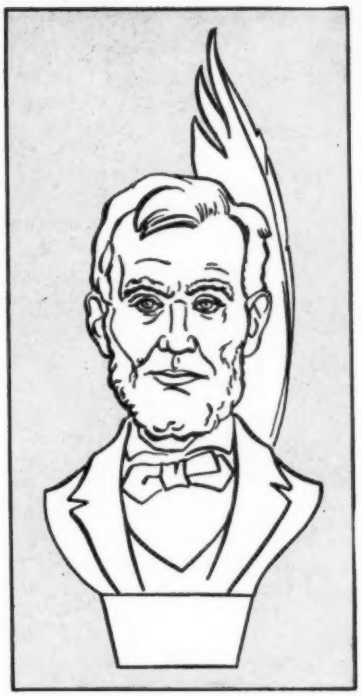

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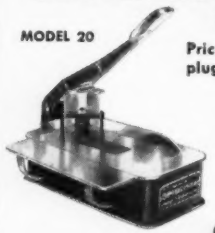
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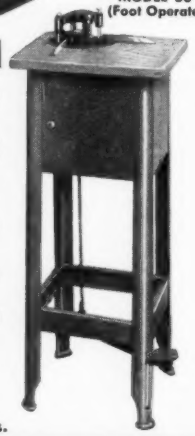
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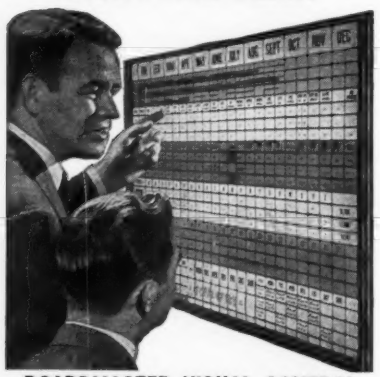
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Digital computer C-1

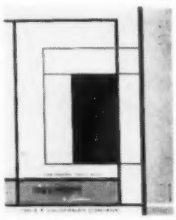
Bendix Computer Div., 5630 Arbor Vitae, Los Angeles 45. Characteristics of automatic programming systems for the Bendix G-15 digital computer are described in an eight-page brochure (AR-1060) entitled "Bendix G-15 Automatic Programming Systems." Partially coded illustrations of typical programming problems are given, and a complement of peripheral equipment for the G-15, including punched paper tape units, is shown.

Merchandising control system C-2

Universal Controls, American Totalisator Div., 745 Fifth Ave., N. Y. 22. An illustrated brochure describes Uni-tote, an automated merchandising control system that uses point-of-sale registers to gather pertinent sales information.

Movable interior walls C-3

The E. F. Hauserman Co., 5711 Grant Ave., Cleveland 5. A fully illustrated brochure depicts the Signature line of movable interior walls and explains the design principles on which the wall systems are based. Doors, hardware, and basic electricals are discussed, as well as accessories and special conditions. Complete specifications are given, including those of paint finishes and sound control features.



Thermo-Fax copy paper C-4

Minnesota Mining & Mfg. Co., Dept. L1-24, 900 Bush Ave., St. Paul 6, Minn. A reference table that indicates the correct size, type and color of Thermo-Fax copy paper to be used for making copies of individual tax forms, is included in the "Guide for Reproducing Federal Tax Returns." The booklet also names states in which reproductions of tax returns are authorized.

Office smoking accessories C-5

Smokador Products, 71 Locust Ave., Bloomfield, N. J. A 64-page catalog lists innumerable products in the company's line of smoking accessories for the office. Waste baskets, floor lamps, desk lamps, and combination lamp ashtrays are also depicted in the publication. Wall urns, sand pans, and pottery urns are among the ash receptacles included; photographs illustrate each of the products.

Danish design in offices C-6

Jens Risom Design Inc., 444 Madison Ave., New York 22. A colorful brochure describes and illustrates office installations that reflect the contemporary Danish influence. Prize-winning executive offices, corporation reception areas, board rooms, and all-purpose working areas are included in this roundup of American business environs.

Executive furniture series **C-7**

B. L. Marble Furniture, Inc. ,Bedford, Ohio. The 2000 series of executive furniture, including desks, tables, and cabinets, is beautifully illustrated in a colorful brochure. An item of interest is the fan top, conference type desk with ring chairs.

Power cutters **C-8**

The Challenge Machinery Co., Grand Haven, Mich. Booklet F-638 provides information on the operating features and accessories of power cutters in 19⅜ through 30½-inch size. The illustrated booklet gives specifications and suggests methods by which power cutters can save time and boost production.

Private telephone system **C-9**

Commercial Sound Div., DuKane Corp., St. Charles, Ill. A six-page brochure with 22 illustrations explains the benefits of the private automatic telephone system. Executive use of the company's Dial Flexifone which combines the best features of intercom equipment with those of the private automatic telephone, is emphasized.

Photocopying **C-10**

Anken Film Co., Newton, N. J. The first in a series of pamphlets describing photocopying techniques deals with special papers, film positives, Monobath solutions, and other materials.

Partition panels **C-11**

Simpson Timber Co., 2040 Washington Bldg., Seattle, Wash. Movable partition panels of woodgrain finish or primed hardboard finish are illustrated in a colorful, 8-page brochure.

Silver sensitized **C-12**

Peerless Photo Products, Inc., Shoreham, N. Y. A four-page brochure presents 33 silver-sensitized photocopy products. The brochure presents the products in three categories: slow contact, standard contact, and projection speed papers.

Contact printer **C-13**

Triangle Business Machines, Inc., 1808 S. Main St., Los Angeles 15. A two-color brochure depicts the Triangle line of photocopy equipment for office use, and the Universal series, with contact printer, for industrial use.

BOOKLETS

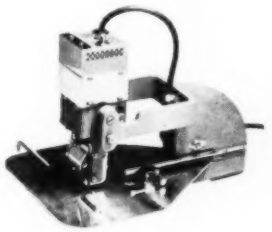
Health insurance **C-14**

The fate of voluntary health insurance depends upon the coverage given by employee benefit plans, according to the authors, who then ask, will the recent inflationary trends in health insurance undermine the entire current benefit structure? This is the perimeter for discussion in "Health Insurance: Are Cost and Quality Controls Necessary?" Single copies of the booklet are available from The Brookings Institution, 1775 Massachusetts Ave., N.W., Washington 6.

"Waste Makers" **C-15**

"This issue of *Design Sense* will not attempt a point-by-point refutation of 'The Waste Makers.' Rather, it will discuss the current and mounting furor over 'obsolescence' in general, and present what we hope will turn out to be some new guideposts, not only for Mr. Packard, but for all U. S. manufacturers." From this preface the authors inveigh—with illustrations. *Design Sense*, Lippincott and Margulies, Inc., 430 Park Ave., New York 22.

New **ROBERTS**
universal electric
NUMBERING MACHINE



The numbering head of the new Roberts E-21-U "universal electric" is entirely flexible. It can be turned to permit numbering at any point on a sheet, card, tag, label or strip of material up to 12 inches wide and of any length. It automatically prints numbers from 1 to 999,999 with instant choice of consecutive, duplicate or repeat, through as many as 10 carbons. Just plug in. Also available for foot operation. Roberts numbering machines have been leaders since 1889. Write Roberts Numbering Machine Division, Heller Roberts Mfg. Corp., 700 Jamaica Ave., Brooklyn 8, N. Y.

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Manufacturing Corporation
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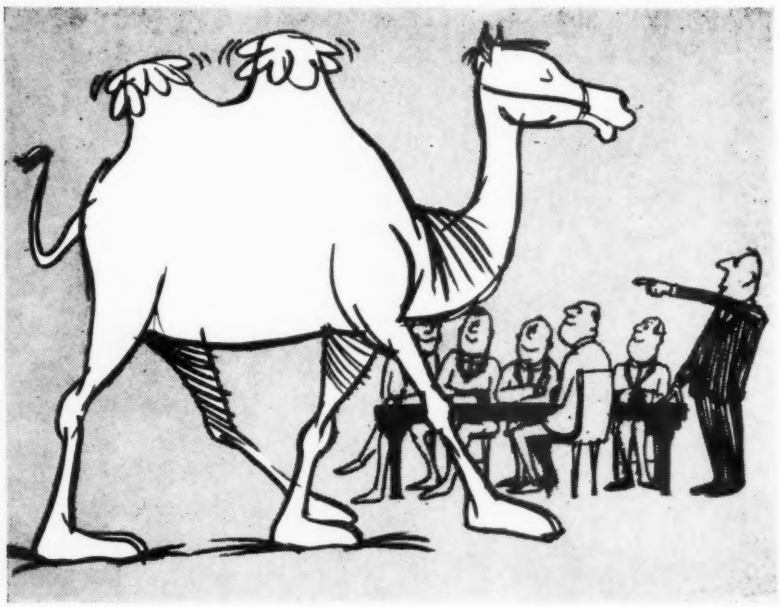

"MORE CLEARANCE—LESS CONFERENCE"

A BOOK reviewed on page 8 of this issue ("The Office and Tomorrow's Business," by L. C. Walker) makes a point within its text that can bear constant repeating. "If a conference must be held, it should be kept clearly in mind that it is a device for considering and adopting policies, never for carrying them out. What American business needs is more clearance and less conferences."

A hearty Amen. The insidious web of committees, steering groups, work conferences, etc., continues to grow apace even though nearly everyone in business pays pious lip service to the need for greater individual responsibility and initiative. The creation of a committee, of an amorphous group of people, none of whom need be personally responsible for any action or recommendation, is a wonderful crutch for those already too comfortable, but a terrible burden on those who could, if left alone, be most effective. For the rash of group thinking and group decisions which afflict so much of American business holds a greater peril than lost time and belated decisions. Far more serious is the fact that very often the decision reached is based on the lowest common denominator, the compromise that's not opposed by anybody, but doesn't arouse much enthusiasm in anybody either.

In good times, when everyone prospers, perhaps a business can afford the luxury of being, neither wholly right nor wholly wrong, but somewhere in between. At the moment, when competition grows more vigorous daily, and the "shrinking profit margin" has become a household phrase, it seems a dangerous extravagance. What is even worse, it's an extravagance that brings no one any benefits. At best it creates boredom, at worst, utter frustration.

Someone once said that a camel looks like a horse designed by a committee. A camel is a worthy beast; it will usually get its passenger to his destination — eventually. But it's no use in a horse race, and that's what business — and the country — faces these days.

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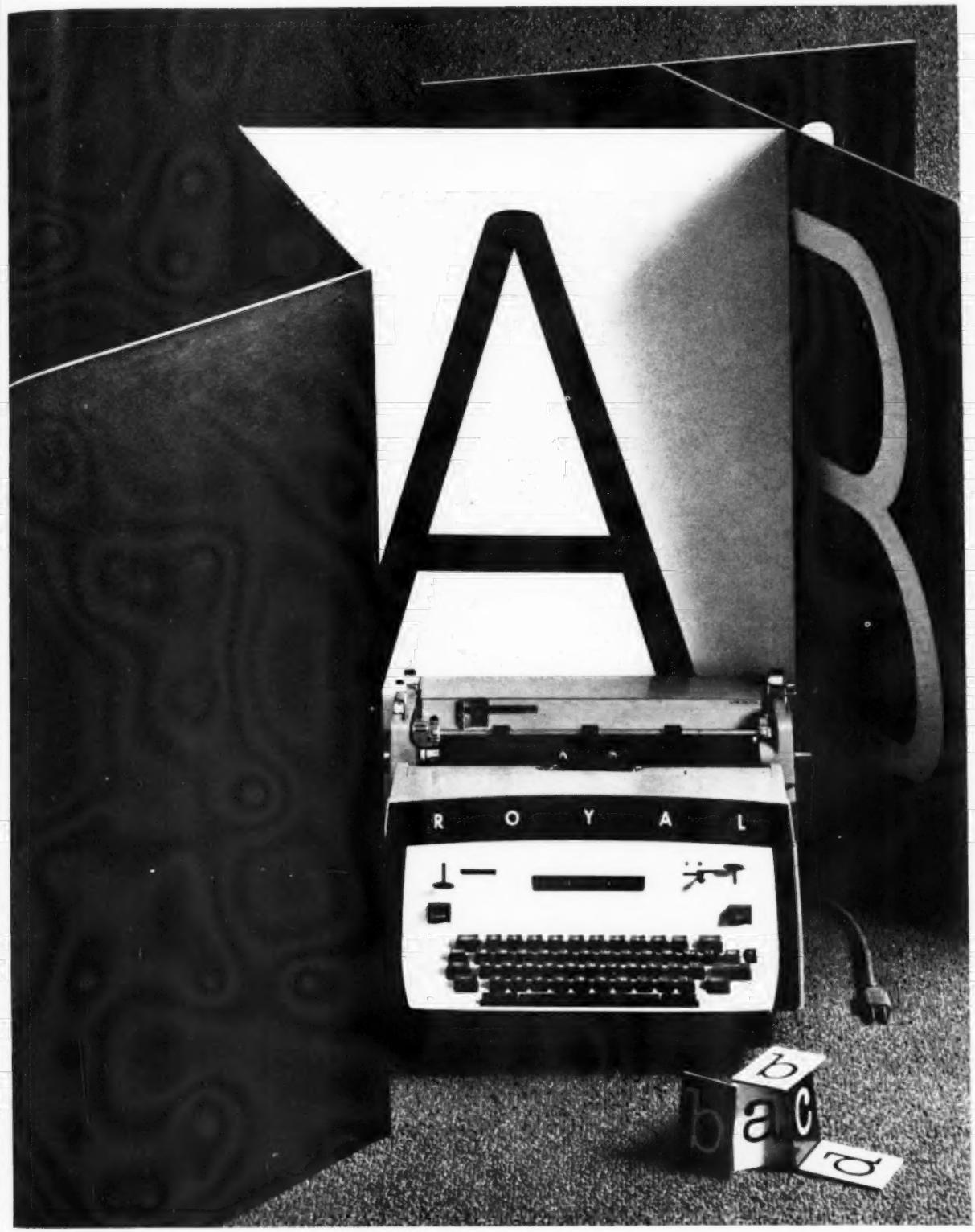

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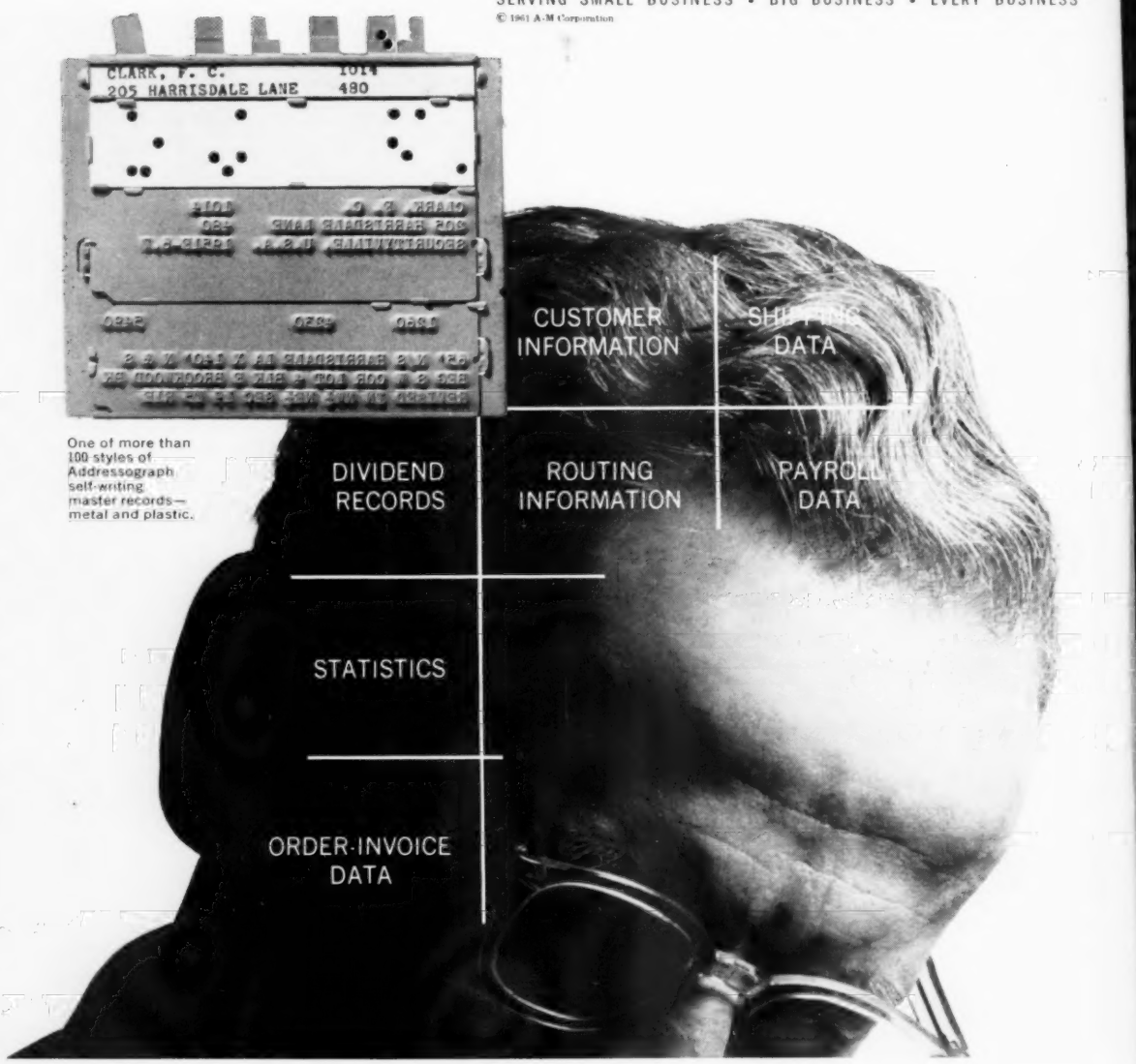

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